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# School Nurse Perceptions and Decisions about Children Self-Carrying Inhalers in School

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UNIVERSITY OF SAN DIEGO

Hahn School of Nursing and Health Science

DOCTOR OF PHILOSOPHY IN NURSING

SCHOOL NURSE PERCEPTIONS AND DECISIONS ABOUT CHILDREN

SELF-CARRYING INHALERS IN SCHOOL

by

Lisa Anne Dominguez Jaurigue, RN, MSN

A dissertation presented to the

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requirements for the degree

DOCTOR OF PHILOSOPHY IN NURSING

June 2016

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UNIVERSITY OF SAN DIEGO  
Hahn School of Nursing and Health Science  
DOCTOR OF PHILOSOPHY IN NURSING

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## Abstract

Every state in the United States has passed legislation allowing students to self-carry rescue inhalers in the school setting. Many organizations are stakeholders in respiratory issues, school health issues, and pediatric issues, recommending the support of this practice. Students' ability to self-carrying rescue inhalers in the school setting has been impacted by school nurse perceptions and decision-making. This study addressed the questions: (a) What are school nurse perceptions and attitudes in regard to children self-carrying inhalers in the school setting? (b) How do school nurses decide whether children can self-carry inhalers in the school setting? and, (c) Are school districts and school nurses aware of the laws and guidelines regarding children self-carrying inhalers in the school setting? In this grounded theory study, 20 elementary and high school nurse participants were interviewed. The taped interviews were transcribed and analyzed utilizing grounded theory methods. The data were categorized into a conditional matrix that addressed context, conditions, actions, and consequences. From this analysis, a substantive theory was developed, "*Balancing decisions about the self-carry practice: Powerful influences.*" Various factors weighed on the nurses' decision-making, such as laws, policies, school characteristics, student characteristics, trust, knowledge deficits, teachers, safety nets, control, nursing philosophy, internal policies, praxis, and assessments of students. The consequences included elementary school nurses manipulating the situation and micromanaging; and high school nurses manipulating the situation, letting it go, and fostering independence and empowerment. Elementary school nurses neither encouraged nor facilitated the self-carrying of rescue inhalers unless the parent was adamant about the need to self-carry. Conversely, high school nurses

encouraged and facilitated the self-carry practice. These findings have implications for nursing practice, nursing science, and policy development that could enhance self-carry practices. Based on these implications, future study could address many areas of limited research, such as manipulation of the self-carry situation, appropriate practices to support or prepare students for the self-carry practice, legislative evaluation, and outcomes with students who self-carry.

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## Dedication

This dissertation is dedicated to my family. Reflecting on these many years brings memories of joy that each of my children have brought me throughout this process. It started with my son Antonio and our “pinky promise.” This encouraged me to start my PhD and continue the process until the end. Gabriel has cared for his brother and sister when I was in school, which was great. It was a relief knowing my little children were at places like the pizza parlor or the zoo when I was in class. Teresa was instrumental in her support. I enjoyed her company on trips to the University of San Diego. Most important, were her frequent reminders that she was past 10 years of age. Isaiah was the best at giving me advice. I am glad I listened to my 4-year-old on the first day of class when he told me “Mom, don’t get in any fights.” His intellectual curiosity inspired me, asking me to ask my teachers what slugs ate. Nicole has been a cheerleader with unending words of encouragement that were always without pressure. Tammy has been an inspiration as she has pursued degrees while raising children too. I also dedicate this dissertation to Antonio. He would make sure our children were well cared for when I was away at school. He would ensure I had protected time to study and write. He has always supported my educational endeavors, from my first degree to this degree, all the way to the end. I love my family and dedicate this work to them.

## Preface

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The greatest acknowledgment is to the Most Holy Trinity; the Father, Son, and Holy Spirit. I reflect back in awe of the process, the ah-ha moments, the completion of such an endeavor, and the positive impact it can have on others; and I realize that it is the Holy Spirit working through me. As Mother Teresa so graciously stated, "I am a little pencil in the hand of a writing God who is sending a love letter to the world."

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# **CHAPTER I**

## **SCHOOL NURSE PERCEPTIONS AND DECISIONS ABOUT CHILDREN**

### **SELF-CARRYING INHALERS IN SCHOOL**

#### **Background and Significance**

Asthma is considered a chronic illness in the United States and is one of the most prevalent chronic illnesses among children (American Academy of Pediatrics [AAP], n.d.). According to the American Lung Association (ALA; 2014a), approximately 7.1 million youth under the age of 18 are affected by asthma. Asthma trends among those aged 5 to 14 years depicted an increase in the number of deaths in the 1980s and 1990s, from 39 deaths in 1979 to 131 deaths in 1998. Subsequently, there has been an overall decreasing trend in the 2000s, with 97 deaths in 2005 and 99 in 2006 (ALA, 2010). However, mortality is now trending up again, with 169 deaths for children under 15 years of age in 2011 (ALA, 2014a) and 187 deaths for children under 18 years in 2014 (Centers for Disease Control and Prevention [CDC], 2016a). Overall, the percentage of asthma among children has increased steadily since the 1980s (Asthma and Allergy Foundation of America, 2016). In 1980, 3.6% of children under 18 years of age were diagnosed with asthma; in 2001, the number was 7.5%; and in 2014, 8.6% of children had asthma (CDC, 2002, 2016b). In Arizona exclusively, asthma prevalence in children was reported at 10.1% in 2006, 8.2% in 2008, and 9.4% in 2010 (ALA, 2012). The ALA (2014a) reported childhood asthma prevalence in America ranged from 6.4% in Nevada to 13.9% in the District of Columbia. The CDC (2015a) estimated, on average, 10% of children in a classroom nationwide have asthma. As children spend a majority of their day in school, addressing the asthmatic child in the school setting from various perspectives has become

imperative. Absenteeism in schools related to asthma accounted for 14.4 million lost school days in 2008 (ALA, 2014a). Other consequences of asthma, such as sleep disturbances, might also impact the school performance of an asthmatic child (Taras & Potts-Datema, 2005). This could evoke far reaching effects for these children, potentially impacting their adulthood.

School nurses have played a pivotal role in caring for asthmatic children in a school setting. School nurses have spearheaded asthma education as well as provided medication administration, assessment, referrals, interdisciplinary collaboration, and other functions. The literature supports the need for school nurses to provide education and support to asthmatic children in order to promote positive outcomes (Anderson et al., 2005).

Laws enacted over the years have transformed the school environment and access to education for children with special health needs and disabilities (Jones & Wheeler, 2004). Children with asthma could be legally protected depending on the severity of the disease and its impact on the child's education (Jones, Wheeler, Smith, & McManus, 2009). Federal and state legislation has been enacted in all 50 states to promote a system allowing children to self-carry asthma or anaphylaxis medication at school or while attending school functions (National Heart, Lung, and Blood Institute [NHLBI], 2014). The National Asthma Education and Prevention Program (NAEPP) stated that essential asthma school policies should include the practice of allowing children to self-carry quick-relief inhalers whenever possible. Supported by school health personnel, permitting students to self-carry has also been recommended within the asthma guidelines for schools (NHLBI, 2005a, 2014).

From this perspective, school nurses and health policy could improve the health of children with asthma by allowing them to self-carry inhalers in the school setting; however, there has been little research to support this practice. Anecdotal evidence suggests that, whenever the notion of children self-carrying inhalers in the school setting is mentioned to school nurse colleagues, many resist by describing a problem or incident they encountered with this issue. Laws have been enacted to encourage this practice, but many questions remain, including: (a) What are school nurse perceptions and attitudes in regard to children self-carrying inhalers in the school setting? (b) How do school nurses decide whether children can self-carry inhalers in the school setting? and (c) Are school districts and school nurses aware of the laws and guidelines regarding children self-carrying inhalers in the school setting? This study addressed these questions of importance for the practice of school nursing and the health of asthmatic children.

### **Purpose of the Study**

The overall purpose of this study was to explore the perceptions and decisions of school nurses when caring for asthmatic children who might need to self-carry prescribed inhalers in the school setting. With this knowledge, hypotheses about interventions could be developed and studied to support the self-carry practice encouraged by the National Heart, Lung, and Blood Institute (NHLBI) and other experts. Furthermore, implementation of evidence-based interventions could occur to make self-carry practices safer in the school setting. The specific aims of this study were to:

1. Describe the perceptions of school nurses regarding children who self-carry their prescribed inhalers in the school setting.

2. Describe the care that school nurses provide for asthmatic children in the school setting.
3. Describe the decision-making processes school nurses utilize to determine when and how children should self-carry inhalers in the school setting.

### **Overview of Methodology**

This study utilized grounded theory methodology. This method was appropriate as the study investigated “processes, activities, and events” (Creswell, 2003, p., 183) that school nurses experienced in their care of asthmatic children. The theoretical underpinning of grounded theory is symbolic interactionism. Symbolic interaction proposes that the participants’ natural context, experiences, actions, and interactions determine their view point in order to understand their world (Jeon, 2004). A convenience sample of school nurses from various school districts in Arizona were interviewed. Theoretical sampling was also employed within the convenience sample in order to address analytical findings and achieve theoretical saturation. These interviews were transcribed. Data analysis occurred simultaneously with data collection through semi-structured interviews. A constant comparative process was employed for data analysis which allowed for refinement and alteration of questions and processes as needed. An audit trail or diary, in the form of memos, were kept to account for refinements and decisions throughout the study. From the data, substantive theory was generated to explain how the perceptions and decision-making processes of school nurses influenced the care they provided children with asthma who self-carried their inhalers in the school setting.

## **Definition of Terms**

The following definitions were used to inform this study:

**School nurse** – an individual licensed as a Registered Nurse and who practices in the school setting.

**Self-carry** – the child's act of carrying and using his/her own prescribed bronchodilator metered dose inhaler while in the school setting.

**Students** – youth in grades kindergarten to twelfth grade.

## **CHAPTER II**

### **Literature Review**

#### **Purpose of Literature Review**

A literature review within the grounded theory tradition has various purposes. Although little has been known about school nurses' perceptions and decisions in reference to children self-carrying inhalers in the school setting, literature was used throughout the entire research process. This study utilized the literature before data were collected in order to establish the "social significance" (Wolcott, 2001, p. 73) of the issue. Another purpose was the identification of important documents related to the issue (e.g., legislation, expert opinion). The literature was applied to develop the demographic survey, questions to guide the interviews, and assistance with the theoretical sampling (Strauss & Corbin, 1998).

In addition to reviewing the literature before research commenced, literature was utilized during data collection and analysis in order to increase sensitivity, compare and contrast data, propose questions during analysis, and confirm findings (Strauss & Corbin, 1998; Creswell, 2003). The literature was used inductively to assist with analysis of the data, as opposed to using it to lead the research (Creswell, 2003).

#### **Organization of Literature Review**

This chapter addresses the pertinent literature as it related to the pre-data-collection purposes of significance, important documents, interview question development, and theoretical sampling. Sources of information included professional position statements about self-carrying inhalers in the school setting, legislation that supported self-carrying of inhalers in the school setting, and research findings. The

research findings that addressed self-carrying inhalers were policies, management in the schools, school nurse perceptions and decision-making, dedicated studies to the self-carry topic, and dedicated studies to the self-carry topic of epinephrine auto-injectors (EAI).

### **Expert Opinions**

Various organizations and associations have collected data and supported the ability of children to self-carry inhalers in the school setting. The leading authority regarding asthma management guidelines for children in the school setting has been the NHLBI. The NHLBI's NAEPP published a "Resolution on Asthma Management at School" (NHLBI, 2005a). Numerous organizations and policies have endorsed this guideline, which recommended active participation in school activities, safety, and self-management for asthmatic children in the school setting. One essential component was that "policies are encouraged that allow students to carry and self-administer quick-relief medication whenever possible" (NHLBI, 2005a, para. 3). This publication has remained the framework for developing and implementing strategies for schools to manage asthma, such as the CDC's (2002) "Strategies for addressing asthma within a coordinated school health program" (CDC, 2015b).

The NAEPP also provided clinical guidelines, "When should students with asthma or allergies carry and self-administer emergency medications at school?" (NHLBI, 2005b). This document defined criteria for health care providers to guide decisions about whether children could self-carry inhalers in the school setting. Student factors, parent/guardian factors, and school and community factors were provided. The guidelines expressed that the goal was to have all students eventually self-carry their asthma medications and if they were not ready to do this, their asthma action plan (AAP)



should include interventions to assist them in reaching this goal (NHLBI, 2005b). This publication has remained current through citations and links within publications (NHLBI, 2014).

Expert Panel Report 3 (EPR-3) guidelines were developed by a committee of experts under the direction of the NAEPP (NHLBI, 2007). These guidelines provided asthma care recommendations based on the latest scientific evidence and have been posted publicly so various stakeholders and agencies could comment on the findings. Regarding children self-carrying inhalers in the school setting, the EPR-3 stated a lack of research supporting this practice but recommended that clinicians produce an AAP for their patients and that these be communicated to the schools. The guidelines further recommended that AAPs include “the clinician’s recommendation regarding self-administration of medication” (NHLBI, 2007, p. 298), although it did not specifically mention self-carrying an inhaler. This was based on evidence from nonrandomized trials and observational studies. These guidelines also stated:

Reliable, prompt access to medication is essential, but it may be difficult because of school rules that preclude the student from carrying medications. The NAEPP and several member organizations have adopted resolutions that endorse allowing students to carry and self-administer medications when the physician and parent consider this appropriate. Many state governments have passed legislation that allows self-administration of asthma medication in schools. (NHLBI, 2007, p. 298)

This information from the EPR-3 appeared to support children self-carrying inhalers in the school setting, despite the lack of research to support this practice

(NHLBI, 2007). These guidelines were the third publication and remain the most recent; the first work, EPR-1, was published in 1991 and EPR-2 was published in 1997.

Many organizations indirectly supported the ability of children to self-carry inhalers by recommending that the NAEPP guidelines should be followed. A main supporter has been the U.S. Department of Health and Human Services' Healthy People 2020 document. Their focus area of respiratory diseases has a goal to "Promote respiratory health through better prevention, detection, treatment, and education efforts" (healthypeople.gov, 2014, para. 1). To reach this goal, one of the Healthy People 2020 objectives states, "Increase the proportion of persons with current asthma who receive appropriate asthma care according to the National Asthma Education and Prevention Program (NAEPP) guidelines" (healthypeople.gov, 2014, Objective RD-7). Another indirect supporter was an interdisciplinary team of nationally recognized asthma experts who published childhood asthma policy recommendations that could assist others in adhering to the NAEPP asthma guidelines (Lara et al., 2002; Wheeler, Buckley, Gerald, Merkle, & Morrison, 2009; Wilson & Bogden, 2005).

In addition to the NAEPP and other indirect supporters, several other groups had specific recommendations for the self-carry issue in the school setting. The CDC (2015b) recommended that the parents, schools, and physicians determine whether children should be allowed to self-carry on a case-by-case basis; it further stated that students needed immediate access to asthma medication. Historically, many groups were early in supporting the self-carry initiatives. The National Association of State Boards of Education (NASBE) provided a sample policy for a school asthma program. In this policy, it stated that if state law permitted, students were allowed to self-carry inhalers in

the school setting if the school nurse approved and with the approval of the parent and prescribing provider (Wilson & Bogden, 2005). The American Academy of Allergy, Asthma, and Immunology recommended that, in general, children in the school setting should be allowed to self-carry their inhalers with provider and parent permission (American Academy of Allergy, Asthma, and Immunology, 2002). The American Academy of Allergy, Asthma, and Immunology developed this publication along with the American Academy of Pediatrics (AAP), the NHLBI, and the NAEPP. Furthermore, the National Association of School Nurses asserted that children had a right to self-carry inhalers when developmentally able (2005). Currently, many organizations have combined their recommendation and efforts. The NASBE (2013) joined other organizations in supporting asthma management, including support of self-carry, through a collective publication. This publication, “Joint statement on improving asthma management in schools” (2013), linked from the NASBE website, had no specific author but garnered support from many organizations (i.e., American Association of School Administrators, ALA, Asthma and Allergy Foundation of America, Center for Green Schools at USGBC, Healthy Schools Campaign, Merck Childhood Asthma Network, Inc., National Association of School Nurses, NASBE, National Education Association Health Information Network). This document had a self-carry component to “ensure students with asthma know the policies and procedures to self-carry, self-administer and have access to quick relief medications (i.e., albuterol inhaler)” (Joint Statement on Improving Asthma Management in Schools, 2013, p. 2).

In summary, there was an abundance of federal agencies, experts, and special interest groups that provided specific or indirect recommendations that children ought to

be allowed and should be supported to self-carry their inhaler in the school setting. There were no agencies on record that discouraged this practice. Conversely, no research supporting this practice was cited in the majority of the resolutions; the NAEPP's resolution only cited the recommendations of other federal agencies, specialty organizations, and expert opinions as the level of evidence.

## **Legislation**

The U.S. Federal Government supported the professional consensus on the rescue inhaler self-carry issue through the “Asthmatic School Children’s Treatment and Health Management Act of 2004,” which was passed to encourage states to enact legislation supporting children self-carrying asthma inhalers and anaphylaxis medication. This act authorized grants to states that had laws that allowed children to self-carry prescribed inhalers if they could demonstrate an ability to self-carry and if documentation and a treatment plan were given to the school by the prescribing practitioner (Center for Health and Health Care in Schools, 2004; Public Law 108-377, 2004). After this act was passed, many states followed suit. By 2007, only three states (i.e., South Dakota, Vermont, Connecticut) had not enacted state laws (Allergies and Asthma Network Mothers of Asthmatics, n.d.). By 2010, all 50 states passed legislation to allow children to self-carry inhalers (Allergies and Asthma Network Mothers of Asthmatics, 2010; NHLBI, 2014). In Arizona, where this study was conducted, legislation was passed in April 2005. The Arizona Revised Statute (ARS) 15-341 stated the only requirements were that an inhaler must have a prescription label showing the medication was prescribed to the child and a note from a parent or guardian that the child can self-carry (Arizona State Legislature, 2005). There was no requirement that school personnel or a school nurse be involved in

the decision, that a practitioner must confirm the child's ability to self-carry, or that an AAP be in place. While there has been no research to support these requirements, the absence of this oversight in the Arizona legislation could lead to situations that are unsafe for children in the school setting.

A child's right to self-carry might also be protected under federal legislation, such as the Individuals with Disabilities Education Act, Section 504 of the Rehabilitation Act of 1973, and Title II of the Americans with Disabilities Act (Jones & Wheeler, 2004). These laws have been supportive of the child if the asthmatic condition was severe, debilitating, and interfered with the child's learning.

## **Research**

**Self-carry of inhalers – policies and management in the schools.** Multiple studies reported the number of states, districts, or schools that allowed students to self-carry inhalers in the school setting. These studies were produced by official agencies and independent researchers. Some studies measured factors related to asthma management and included the self-carry component as one finding. One of the most thorough assessments of school health issues is the School Health Policies and Program Study (SHPPS; CDC, 2015c). This national survey of policies affects students in kindergarten through twelfth grade at the state, district, school, and classroom levels with participants in all 50 states and the District of Columbia. SHPPS data are collected every 6 years, most recently in 1994, 2000, 2006, 2012, and 2014. The 2012 study encompassed state and district levels while the 2014 study addressed the school and classroom levels (CDC, 2015c). Each study was conducted by the CDC and originally addressed eight components of school health programs; recently, a new model has been adopted that

incorporated 10 components: (a) health education; (b) physical education and physical activity; (c) nutrition environment and services; (d) health services; (e) counseling, psychological, and social services; (f) healthy and safe school environment, including social and emotional climate; (g) physical environment; (h) employee wellness; (i) family engagement; and (j) community involvement (CDC, 2015c). The health services components addressed the self-carry issue in the school setting amongst other school health services.

Reviewing data from the multiple SHPPS demonstrated a trend; between 2000 and 2006, the study found that state district policies allowing students in schools to self-carry their inhalers increased from 45.8% to 88% (CDC, 2007). In the 2012 study, 92.5% of districts had a policy allowing students in schools to self-carry their inhalers (CDC, 2013). Elementary schools exhibited a dramatic increase in permitting students to self-carry inhalers; from 59.3% in 2000 to 76.9% in 2006 (Kahn, Brener, & Wechsler, 2007). For the 2006 survey, 83.3% of middle schools and 92% of high schools allowed students to self-carry their inhalers; 81.6% of all schools had self-carry procedures (CDC, 2007). The most current data, the 2014 study, presented the following percentages for schools with specific procedures that permitted students to self-carry a prescription quick-relief inhaler: elementary schools (73.9%), middle schools (90.6%), high schools (91.6%), and all schools (82.1%; CDC, 2015c). These findings could be a reflection of the various laws enacted supporting and allowing children the right to self-carry; an overall trend in the amount of students who are allowed to self-carry inhalers is on the rise despite some slight decreases in the elementary and high school populations.

School Health Profiles (Profiles) was another survey developed by the CDC and other agencies to measure health education and policies (Demisse, McManus, Shanklin, Hawkings, & Kann, 2013). This survey, conducted biennially since 1996, targeted middle- and high schools; Grades 6 through 12. The survey addressed five of the eight components of a coordinated school health program: (a) health education, (b) physical education, (c) healthy and safe school environment, (d) health services, and (e) family and community involvement. The latest study measured policies regarding the self-carry practice in the school setting. Findings were presented by areas of states, large urban school districts, territories, and tribal entities. The state findings reported that between 40.3% and 93.7% of schools (median 74.8%) adopted a policy stating that students were permitted to carry and self-administer inhalers, between 75.9% and 98.8% of schools (median 91.4%) had procedures to inform students of the self-carry policy, between 69.9% and 98.3% of schools (median 93.3%) had procedures to inform parents and families of the self-carry policy, between 60.2% and 95% of schools (median 82.9%) had designated an individual responsible for implementing the policy, and between 20.6% and 70.9% (median 53.5%) had schools who fully implemented a policy. Arizona's findings were 54.4%, 86.4%, 86.2%, 91.6%, and 35.6% concordantly (Demisse et al., 2013).

The Asthma and Allergy Foundation of America produced an annual report, titled State Honor Roll, with the most recent data available in 2015 (Collins, 2015). This study assessed all 50 states and the District of Columbia's efforts for the prevention and management of allergies and asthma. The Asthma and Allergy Foundation of America worked with experts to develop 23 "core policy standards" (p. 7) as an assessment tool in

addition to 12 extra credit indicators. From this assessment, states were placed on the State Honor Roll if they demonstrated exemplary management of asthma and allergy issues. For 2015, 14 states made the honor roll. Core Policy Standard 2 examined whether states had a policy in place to measure a student's right to self-carry and self-administer prescribed inhalers in schools. According to the assessment, all 50 states and the District of Columbia had self-carry legislation for inhalers (100%). Core Policy Standard 4 measured policies that protected school employees from liability surrounding student injuries because of the self-carry laws and policies. This standard was met 16% of the time; eight schools had policies in place for protection of employees. The self-carry practice was typically allowed after conditions were met (e.g., parental permission, doctor permission and prescription, demonstration of competence and responsibility, release of school liability). Specifically in Arizona, where this dissertation study was conducted, 14 core policy standards and two extra credit indicators were met. Arizona did not qualify for the honor roll (Collins, 2015).

Independent investigators, those researchers not under the umbrella of the CDC, have studied asthma policies and management in the school setting. One component of this research was the percentage of schools that had a policy in place or allowed students to self-carry inhalers in the school setting. These independent surveys differed from the SHPPS findings as they measured only school policies and practices, rather than state policies, and were conducted prior to the enactment of legislation. A 2002-2003 survey of school nurses in New York reported that 36.4% of schools allowed students to self-carry inhalers (Kielb, Lin, & Hwang, 2007). Pennsylvania school nurses were surveyed in 2004; reportedly 72% of rural schools and 47% of urban schools allowed students to self-



carry asthma medications (Hillemeier, Gusic, & Bai, 2006). A New York City survey of various school personnel discovered that 28.1% of the people surveyed believed asthma inhalers should be kept with students. No report of self-carry policies were provided (Snow, Larkin, Kimball, Iheagwara, & Ozuah, 2005). The last two studies attempted to compare school policies to the NHLBI recommendations; researchers discovered that many aspects of the NHLBI resolutions were not being implemented completely (Hillemeier et al., 2006; Snow et al., 2005).

One study assessed school-level data regarding the application of the NAEPP's "How asthma-friendly is your school?" recommendations compared to the SHPPS 2006 data. A sampling of SHPPS schools made for a nationally representative sample of public and private elementary-, middle-, and high schools. The findings relevant to the self-carry issue were included in a statistic about asthma action plans rather than representing a true measure of self-carry. The authors revealed that self-carry and self-administration of inhalers was allowed and asthma action plans were received by more than 80% of schools (Jones et al., 2009).

A 2006 study addressing self-carry policies utilized SHPPS data to investigate how "the implementation of school health policies and programs vary by school demographic characteristics" (Balaji, Brener, & McManus, 2010, p. 600). This study revealed that the school health policy permitting students to carry and self-administer rescue inhalers was not significantly different among varying school characteristics: school type (Catholic, public, or private), urbanicity, school enrollment, discretionary dollars per pupil, percentage of students qualifying for free-lunch funds, or percentage of college-bound students (Balaji et al., 2010).

Another study indirectly addressed self-carry through policy; a grounded theory study, that included collaboration among schools, medical care providers, and other community organizations to improve asthma care and outcomes through the Childhood Asthma Linkages in Missouri program. This study's findings concerned improved asthma care and outcomes. One change that supported the sustainability of improved care was increased access to asthma medications, per the NHLBI's EPR-3 guidelines (Carpenter, Lachance, Wilkin, & Clark, 2013). This finding did not directly address the self-carry issue, but indirectly confirmed that the EPR-3 guidelines were valued and supported the option to self-carry inhalers in the school setting (NHLBI, 2007).

Data addressing policies regarding children self-carrying inhalers in the school setting appears within asthma management studies. Many studies have investigated whether states and schools had policies allowing children to self-carry; however, the policy piece represented only a portion of asthma management. Data noting the number of children who actually self-carried could provide insight into the behaviors children, nurses, parents, and schools utilize to manage asthma. These data have been typically captured as a mere portion of an asthma study. For instance, one quasi-experimental investigation of 22 schools on the Gulf Coast, addressed whether an asthma management educational intervention would improve nurse, student, and parental knowledge and perceptions, found that only 8% of asthmatic students aged 9 to 11 years kept their inhalers with them (Gregory, 2000).

Another study reported that, out of 466 asthmatic children in Grades K-12, 189 students had access to their asthma medication and 65 (14%) had permission to self-carry (Guglielmo & Little, 2006). These data were collected from school nurses' or parents'

questionnaires. Another study conceded a discrepancy in the findings, one where children were interviewed but parents completed a questionnaire. In Clay, Parris, McCarthy, Kelly, and Howarth's (2008) study about family perceptions, 60.5% of children aged 8 to 18 years reported that they self-carried their asthma medication while only 40.5% of parents reported that their children self-carried. These results demonstrated the complexity of the self-carry issue where adults, such as parents or nurses, might not be aware of children who self-carry.

In a 2011 study indirectly addressing the self-carry policy and management, 14 focus groups were conducted comprising of 103 school personnel (12 school nurses), parents, and physicians in Minnesota. The purpose of the investigation was to assess the beliefs, attitudes, and practices surrounding asthma support in the school setting. Four major themes were discovered; one of them was policy/protocol. One finding specific to self-carry revealed that parents did not know whether their student could self-carry inhalers in the school setting. Another finding reported that groups were confused by laws and policies related to asthma. Also, health professionals expressed uncertainties about how schools implemented state self-carry law (Egginton et al., 2013).

#### **Self-carry of inhalers – school nurse perceptions and decision-making.**

Despite expert guidelines and data suggesting that policies have been implemented, limited data examined whether students actually self-carried in schools. School nurses are in a critical position to make decisions that influence the self-carry practice, enforce policies, and provide care related to children who self-carry. School nurse decision-making about whether the nurses supported these policies or whether students were actually self-carrying in the school setting is relatively unknown. Research regarding

school nurses' general asthma knowledge and perceptions are available, but these studies do not have a purpose or aim to study the nurses' perceptions and decisions relating specifically to the self-carry issue. These few studies were explored with regard to self-carry findings or findings that could assume self-carry practices.

A descriptive study about asthma knowledge and perceptions among school nurses was conducted in 1997 in Maryland and the District of Columbia; 550 school nurses were surveyed using a questionnaire from the NHLBI (Calabrese et al., 1999). Seventy-eight percent of school nurses allowed students to self-administer their asthma inhalers but 60% believed direct supervision was still needed. The study did not specify whether self-administration included self-carry.

In a 2003 study that surveyed approximately 200 school nurses, the perceived asthma training needs included a component in which the nurses established goals. From this assessment of asthma education needs, a training program was piloted and implemented statewide in Minnesota. One of the findings addressing self-carry knowledge revealed that merely 28% of nurses were familiar with NHLBI asthma guidelines (Keysser, Splett, Ross, & Fishman, 2006). The NHLBI guidelines in place at the time of this study were Expert Panel Report-2. This report stated that NAEPP and other organizations endorsed the self-carry option when parents and doctors deemed it appropriate (NHLBI, 2005b). From the participants' perceived asthma needs, goals and training were developed. Two months after the training, goal attainment was measured. The findings specific to the self-carry issue included 17 respondents who set a goal to "work on inhaler technique and spacer use; paperwork for self-carry" (Keysser et al., 2006, p, 265). Of the 17 commitments, 12 respondents completed, four partially

completed, and one participant made no progress toward goal attainment 2 months post-training. The barriers reportedly hampering the self-carry component were (a) the lack of inhalers at school for asthmatic students, and (b) that the nurses either did not know which students were self-carrying or did not see students self-carry (Keysser et al., 2006).

In the 2011 study by Egginton et al. (2013), previously mentioned, findings addressed issues related to the school nurse. Participants cited that children in middle school and beyond were capable of self-carrying inhalers and that hindered the sharing of asthma information with the school as children were managing their own asthma. Confusion surrounded self-carry laws and the schools' role in relation to those laws. Reports included a belief that the self-carry practice started too late, that a "clear idea" (p. 892) of when a child had the ability and ought to self-carry was needed, as well as a conviction that, as a child aged, there should be more independence on self rather than school staff. The participants in this study included 12 school nurses, among other stakeholders, thereby ensuring that the school nurses' perspectives were included in the findings.

Another study of significance analyzed school nurses' self-reporting of knowledge, opinions, practices, as well as experiences of emergencies with asthma, anaphylaxis, and diabetes in the school setting and how these were managed (Allen, Henselman, Laird, Quiñones, & Reutzel, 2012). This study included 2,049 school nurse participants from the United States, Puerto Rico, Guam, and the U.S. Virgin Islands. The survey instrument was divided into five domains and administered via SurveyMonkey®, an online survey website. Four domains incorporated self-carry-related data; knowledge, experience, policy, and opinion. In the knowledge domain, 90% of nurses correctly

identified whether their states had passed rescue inhaler self-carry laws. In the experience domain, participants reported the number of students carrying rescue inhalers within the school/district ( $M = 239.13$ ;  $Mdn = 30$  students who self-carried). A common theme reported was that children did not bring their devices to school, sometimes requiring 9-1-1 calls as the student was without medication at school, no standing order, and no stock medications. In the policy domain, 88% of school policies allowed students to self-carry rescue inhalers; 84.4% of nurses believed that an assessment should occur before allowing self-carry; 89% of the schools developed “device guidelines” (Allen et al., 2012, p. 52) for rescue inhalers; and 78% of the schools kept such inhaler devices nearby, primarily in the nurse’s office but sometimes in the gymnasium. For inhaler self-carry findings in the opinion domain, 95.6% of the nurses thought that self-carrying rescue inhalers was appropriate. Certain conditions were believed necessary in order to self-carry inhalers: 73% of nurses believed that age ought to be a condition, 77% wanted training, 43.7% requested certification, and 77.8% felt the authorization of parents, physicians, school nurses, teachers, and/or administrators was necessary.

In summary, a review of the literature did not reveal any studies that addressed the perceptions and decisions of school nurses regarding the ability of children to self-carry inhalers in the school setting as a main purpose or focus. There were few studies that incorporated the self-carry issue; however, the main focus was directed toward other issues. Overall, study findings reported how nurses practiced in comparison to the NHLBI guidelines, explored beliefs about whether students should self-carry, knowledge and understanding of self-carry laws, and barriers (e.g., lack of knowledge about which students self-carried, lack of medication at school when students self-carried, percentage

of students who self-carried, conditions needed before the self-carry practice should be implemented). The research was limited and did not focus on the school nurse and asthma self-carry issues; therefore, more research would be appropriate.

**Self-carry of inhalers – dedicated studies to the self-carry topic.** One study was dedicated to the issue of students self-carrying inhalers in the school setting, providing insight into children's ability to safely self-carry inhalers in the school setting. This descriptive study, by Flower and Saewyc (2005), involved 34 children aged 5 to 16 years and piloted the Asthma Assessment Interview (AAI), a tool to measure the age children might become competent to self-carry an inhaler. The AAI collected demographics related to age and ethnicity, type of asthma diagnosis, and time using an inhaler. This tool also measured knowledge in the following areas: (a) the definition of asthma; (b) personal asthma symptoms; (c) personal actions when experiencing difficulty breathing; (d) when to use an inhaler, asked in question format and an asthma visual analog scale; (e) what to do when an inhaler did not provide relief (f) knowledge of the name of the inhaler used; (g) personal asthma triggers; (h) ability to tell time on a clock; and (i) what the clock will look like in 4 hours. No students in kindergarten, Grade 1, or Grade 2 passed the AAI. Thirty-three percent of students in Grades 3 to 5, 60 % of students in Grades 6 to 8, and 100% of students in Grades 9 and 10 passed the AAI. Only 13 of 34 students achieved a passing score (Flower & Saewyc, 2005). One limitation of this study was the small sample size; the number of students in each grade level was extremely low.

**Self-carry of epinephrine auto-injectors (EAI) – dedicated studies to the self-carry topic.** Considering the limited research incorporating the inhaler self-carry

phenomena as a main aim, the literature was also examined in terms of the self-carry practice of EAI. This area was explored for possible implications that the self-carry of auto-injectors might have on the practice of self-carrying rescue inhalers. Four studies dedicated to the issue of self-carrying auto-injectors were located and reviewed.

In a Canadian study by Fragapane et al. (2010), children with peanut allergies were examined for their self-carry practices. A total of 706 parents of children older than 5 years of age participated in the study. The findings included: 483 children (68.4%) who self-carried their EAI, but only 385 (79.7% ) of these parents believed their child knew how to use the EAI; the mean age of 5.8 years was when a child first started self-carrying at school; 202 parents (41.8%) decided that their children should self-carry; 74 parents of children who did not self-carry the EAI (33.2%) stated that school policy forbade self-carry; and 164 parents (23.3%) did not know the EAI self-carry policy in school (Fragapane et al., 2010).

The study by Macadam et al. (2012) explored factors that affected teenagers' practice of self-carrying EAIs. Results from 20 teen interviews in 2011 identified six themes; however, only five were located in the report: (a) role of circumstances, (b) type of allergy, (c) attitudes about the device, (d) responsibility and attitudes of others, and (e) feelings and attitudes of allergic teenagers to auto-injectors. In the role-of-circumstance theme, all teenagers carried their EAI at times; the decision to carry their inhaler was based on the place, people present, and potential allergens present. For type of allergy, teens with food allergies felt more in control versus teens with venom allergy; teens with venom allergies were more cautious about carrying their EAI to rural locations. Attitudes about the device revealed that the large size of the EAI caused some teens to not self-



carry. While the needle scared some teens, no evidence supported any impact on the self-carrying of the EAI. Additionally, irritation with remembering to self-carry led to teens not carrying. Responsibility and attitudes of others uncovered that many teens relied on others to carry, check dates, and administer the EAI (e.g., mothers, school nurses, fathers, teachers). When teens self-carried, some of their friends either toyed with or stole their EAI. Teens felt more comfortable carrying their EAI in the presence of positive reactions by others. For the last theme, feelings and attitudes of allergic teenagers to auto-injectors, the concept of teen invincibility could prevent a teen from carrying. Despite being irritated by self-carrying, this carried little influence on how often they actually carried their EAI. The authors did not find that embarrassment or not wanting extra attention had an influence on their self-carry actions (Macadam et al., 2012).

In a quasi-experimental study of high school students during the 2008-2009 school year, an interventional study measured whether education and periodic checks by the school nurse increased the likelihood of students carrying their EAI at all times in school. This intervention group was compared to a control group receiving only education and one routine check at the beginning of the school year. Eleven schools and 77 students participated in the study. The findings suggested no difference existed between the groups when the nurse performed an initial and final check of students carrying their EAI. When checked by the school nurse, 65% of the high school students had their EAI available for use. Approximately one-half of the students with life-threatening allergies were more than likely carry EAI that had not expired and were available for use. This indicated that periodic checks by the school nurse did not impact the outcome of students carrying their EAI (Spina, McIntyre, & Pulcini, 2012).

The fourth and final study explored caregivers' perspectives on the appropriate timing to transition children and teenagers to self-care for their own anaphylaxis illness and treatment. A questionnaire completed by 319 caregivers of children or teenagers measured the parents' beliefs about when this transfer of self-care responsibilities should occur. Self-care responsibilities ranged from self-describing symptoms to self-injecting. Concerning the self-carrying of EAIs, 33.7% of parents believed that 6 to 8 years of age was appropriate for children to carry their own epinephrine (Simons, Sicherer, Weiss, & Simons, 2013).

To summarize, studies that focused on the self-carry of EAIs provides evidence indirectly related to the self-carry of rescue inhalers. These studies measured the percent of students who self-carried EAIs and the age in which they either began carrying or the parent agreed that it was appropriate. Policy or legislative issues were noted in these studies and were consistent with the inhaler findings, including the lack of knowledge regarding legislation. A nurse intervention study was examined. Finally, factors affecting whether teenagers should carry EAIs were discussed in terms of context or circumstances, type of allergy, attitudes about the device/others/the allergic teen, responsibilities of others, and teens' feelings.

Analysis of available research revealed a paucity of information on the proposed topic; the school nurses' perceptions and decision-making in supporting a child with asthma management in the form of self-carrying inhalers in the school setting. Numerous professional position statements and agency guidelines have recommended self-carry practices for children and/or providing education towards self-carry practices in the school setting apparently without an awareness of the current state of asthma care related

to the self-carry practice. School nurses should be crucial stakeholders in this issue, with opportunities to monitor, educate, and support children in their asthma care reflecting the NHLBI asthma management guidelines. School nurses might also be compelled to discourage self-carry practices in situations that could prove detrimental to a child's health.

Based on these studies, sampling was focused on those who practice school nursing with children aged 5 to 18 years of age. Findings were analyzed, compared, and contrasted with the literature to distinguish age-related issues encountered by school nurses when students self-carry, a critical issue considering laws that have not excluded particular age groups. In addition, school nurses must contend with variation in nurse-to-student ratios and staffing models; this information could inform reported barriers in providing asthma care (e.g., time). Therefore, the aim of this research was to discover how the perceptions and decisions of school nurses influenced the care they provide to children with asthma in the school setting, particularly in allowing children to carry and administer their own metered-dose inhalers.

## **Summary**

This chapter presented an overview of literature related to children self-carrying inhalers in the school setting. Of interest was the CDC's various studies and expert recommendations that children self-carry their inhalers when possible, despite the lack of research supporting this recommendation. Federal and state legislation has been enacted to support children who want or need to self-carry. Additionally, published research did not report school nurse perceptions and decisions regarding self-carry. Much of the cited

research had the potential to impact this study. This review was essential for the development of the demographic survey, interview questions, and theoretical sampling.

Notwithstanding recent self-carry legislation and contemporary research findings, nurses face a challenging position. As one study appropriately summarized the issue, “Despite our efforts, we learned that most students with asthma still do not have access to emergency medications during the school day (60%)” (Guglielmo & Little, 2006, p. 299).

### **CHAPTER III**

#### **RESEARCH METHODS**

The essence of the research question(s) governs the appropriate research methodology in a scholarly study. With a dearth of literature addressing school nurse perspectives and decisions concerning the ability of children to self-carry inhalers in the school setting as well as the gravity of the consequences, questions that seek to understand this perspective are needed.

The naturalistic paradigm is to qualitative research as positivism is to quantitative research. Naturalistic inquiry assists the exploration of human experience and the premise that this reality is defined by one's own context and life experiences (Polit & Beck, 2006). This leads to a complex situation, subjective and with multiple truths versus a sole truth, due to multiple differing perspectives of participants. This inquiry also supports research in the participants' natural setting; the researcher enters that setting and becomes actively involved in the research process (Streubert-Speziale & Carpenter, 2007). Determining the process or interaction school nurses encounter when children self-carry inhalers in the school setting calls for a specific qualitative method that incorporates theory development to explain process or interaction. For this study, Grounded Theory was utilized based on the research question and the complement of this qualitative method.

#### **Grounded Theory Methodology**

Grounded theory was developed by Glaser and Strauss (1967) with the belief that "the discovery of theory (is) from data systematically obtained from social research" (p. 2). In addition to theory generation, grounded theory requires constant comparison of the

data, asking questions of the data, and theoretical sampling defining the characteristics of this tradition (Corbin & Strauss, 2008; Creswell, 2003; Jeon, 2004). Variations of the grounded theory tradition include Glaserian, Straussian, constructivist, and situational analysis. These variations stem from the founding work of Glaser and Strauss and demonstrate the evolving nature of grounded theory (Richards & Morse, 2007). One's worldview should be utilized when selecting the appropriate variation (Creswell, 2007). The worldview, or way a person proceeds in actions, is based upon a person's beliefs or paradigm. This study utilized the postpositivism paradigm; a view within the Straussian Grounded Theory espoused by Strauss and Corbin (2008). This variation of grounded theory had a systematic process in data collection and analysis, yet acknowledged the consequence of the researcher and multiple perspectives of the participants. The proposed research sought a systematic process of data collection and analysis, but also required fluid analysis guided by researcher intuition and the participant's data. Grounded theory best supported this study as it stemmed from the philosophical underpinnings of symbolic interactionism (Richards & Morse, 2007).

Symbolic interactionism, concerned with the "inner, or phenomenological, aspects of human behavior" (Manis & Meltzer, 1967, p. 1) towards *things* is based on an individual's context, social interactions, and personal meanings (Blumer, 1986). Therefore, symbolic interactionism served as the basis for this study.

### **Research Procedures**

Research utilizing grounded theory as a method is fluid in nature but abides by general principles. Consistent with grounded theory tradition, including theoretical sampling, the procedures for this study provided constant comparison and questioning

methods of analysis and theory generation. Data collection was informed by grounded theory.

**Sampling.** Consistent with grounded theory methodology is purposeful sampling, specifically theoretical sampling. This sampling strategy is theory driven and focused on developing concepts rather than people (Corbin & Strauss, 2008). The researcher anticipated that school nurses' experiences with children self-carrying inhalers in the school setting could comprise the sample. However, within grounded theory, one cannot be certain how concepts develop; therefore, sampling could require investigations of concepts experienced by others (e.g., health assistants), or other documentation. This allows for opportunities to compare and understand the experiences of school nurses more efficiently. These theoretical sampling decisions occur within the data analysis process based on data gathered throughout the study. This sampling technique sought individuals or documents that would enrich the concepts being addressed. As laws were enacted allowing school children to self-carry inhalers at any age, time was identified as a barrier for school nurses, and a variation existed in nurse-to-student ratios and staffing models, the researcher sampled school nurses working in kindergarten through twelfth grade exclusive of nurse-to-student ratio, staffing models, or other limitations. Therefore, the initial inclusion criteria included (a) English speaking; (b) school nurse with Registered Nurse credentials in a kindergarten through twelfth grade; (c) known experience with asthmatic children; and (d) ability to articulate the experience. Exclusion criteria consisted of nurses who did not meet all inclusion criteria.

**Data Collection.** Data collection options included interviews, observations, videos, autobiographies, newspapers, drawings, and memo-ing for the possibility of

providing valuable data to solidify and/or compare findings (Corbin & Strauss, 2008). These various sources are often used as secondary sources, with interviewing being the most prevalent form of data collection in grounded theory (Creswell, 2007). This study primarily utilized interviews and demographic surveys for data collection. Documents (e.g., legislation, medication sheets, district policy) were utilized as a means to collect data as needed for analysis and concept development.

***Interviews.*** Approximately 20-30 interviews are recommended for a grounded theory study to achieve saturation of emerging concepts and ideas (Creswell, 2007). Corbin and Strauss did not recommend a particular number of interviews for a grounded theory study, but did remark that five or six 1-hour interviews were typically insufficient (2008). Interviewing should be guided by saturation, a concept they believed encompassed more than the mere notion of no new emerging categories or themes. Saturation occurred when a category was developed sufficiently in the “properties” and “dimensions” (Corbin & Strauss, 2008, p. 148) regarding variations, conditions, and relationships sufficiently investigated. The decision to utilize grounded theory was based on the researcher’s deep investigation of the categories and knowledge of the research purpose (Corbin & Strauss, 2008). Approximately 20 to 30 initial and follow-up interviews were planned for this study based on the range identified in the literature, but the focus remained on saturation of the concepts rather than the number of interviews. During data analysis, a follow-up interview was kept as an option to further develop a concept or relationship through probing, clarification, or validation.

Gaining entrée to the sample of school nurses occurred by contacting school nurse supervisors, asking to speak at nursing meetings and school nurse conferences, or directly



recruiting volunteers. Six school nurse supervisor or leaders were contacted and all agreed to allow the researcher to attend and announce the need for participants at five school nurse meetings and one school nurse conference. The researcher made the announcement, distributed the IRB-approved recruitment flyer, and recruited participants. Three nurses were recruited by direct contact from the researcher. All participants were registered nurses. Theoretical sampling occurred as the researcher specifically contacted high school nurse supervisors after interviewing two high school nurses. This focus was needed to explore the high school nurses experiences in more detail. Two of the six nurses' meetings were for school nurses exclusively positioned in high schools. Another sampling decision guided by the data collected was the focus on school nurses who served in schools with high free-and-reduced-lunch percentages. This allowed for an exploration of lower socio-economical student populations. One last sampling decision based on the data was the variety of school districts utilized to recruit school nurse participants. When the data exhibited differences among the districts, this sampling direction was intentionally pursued further to allow for comparison. The researcher contacted these nurses requesting their participation. After informed consent was obtained, the nurses were interviewed at their convenience. The participant chose the location (e.g., school site before or after school hours, district office, home, local coffee shop). A proposed 60 to 90-minute interview was completed with each participant with a possible follow up telephone interview lasting 15 to 30 minutes for further investigation of hunches or to validate findings.

Interviews were recorded and transcribed by either the researcher or a paid transcriptionist. As valuable data could be expressed by the participant after the recording

device is turned off (Corbin & Strauss, 2008), participants were informed that the recording device could be turned back on or notes taken in order to include these data. A diary or audit trail was kept by the researcher in the form of observational notes (ON) and methodological in-process notes (MN). ON was a tool to capture information before, after, and during the interviews (e.g., nonverbal communication, events, observations) and MN addressed critical decisions made during the research process that explained and supported research decisions. These notes were made after each data collection.

The interviews for this study were semi-structured, allowing participants to tell a story from their perspective. A semi-structured interview allowed for rich data collection. The interview guide (Appendix B) consisted of opened ended, broad questions or requests for description of experiences. These questions guided the interview and were based on the research purpose and aims of the study. The literature review also contributed to the interview guide. For example, some studies suggested barriers to asthma management in the school setting, such as knowledge deficits and students' risky behavior, so participants were given the opportunity to discuss their concerns.

Probes or specific questions for clarification were used after participants shared their experiences. As is common within the grounded theory tradition, analysis began immediately as data was being collected; probes developed within interview and new questions developed within or between interviews.

***Documents.*** Document sampling also occurred in various forms. An analysis of school policy, review of state and federal laws, medication documentation sheets, publications, and/or newspaper articles about children self-carrying inhalers in the school setting provided valuable data into the concepts uncovered. These data sources

contributed to the analysis of concepts derived from the interviews. Other valuable documents were created and provided a wealth of information from the researcher's ON. The ON consisted of observations and decisions made by the researcher during data collection that provided further data for analysis. Some observations noted during the interview were not captured on the recording device but were jotted down by the researcher during an interview or after an interview and included in the ON. This note or memo contained important data to use in data analysis and comparison.

***Demographic surveys.*** A demographic data sheet or survey was utilized to obtain descriptive statistics that were valuable in the data analysis. The data requested in this survey included information that could be used in the analysis and comparison of findings between the interviews. For instance, the number of students for which a school nurse is responsible (school nurse-to-student ratio) was obtained on the demographic survey. Additional information about age, education, work experience, work load, school policy, student characteristics, and self-carry practices were also included (Appendix A). The demographic survey was given to the participant to fill out prior to the start of the interview and immediately collected by the researcher.

**Data analysis.** A constant comparison analysis was conducted according to grounded theory tradition; a process of constantly comparing findings in the data with one another or differing data sets or cases. This analysis assisted the researcher with the ability to “differentiate one category/theme from another and to identify properties and dimensions specific to that category/theme” (Corbin & Strauss, 2008, p.73). The constant comparison strategy facilitated saturation and the development of categories (Creswell, 2007). Along with this defining feature of grounded theory, asking questions of the data

assisted in the analysis. Asking questions was critical at every stage of analysis and supported knowledge generation. Questions addressing *who, what, when, where, how,* and *with what consequences* of the data aided the researcher when paralyzed in the data. This questioning technique also provided a tool to help the researcher reframe into another's perspective (Corbin & Stauss, 2008). An explanation of how the critical elements of constant comparison and questioning were utilized in the study along with actual systematic steps of grounded theory that were employed were discussed in Chapter IV.

***Constant comparison.*** This technique of analysis was applied in this study by comparing situations, codes, categories, and themes within an interview data set of a school nurse and between interview data sets of other school nurses. Data was also compared to documents (e.g., school policy, laws, medication sheets, demographic survey, researcher's ON) to develop categories. When new codes and categories arose or differing properties or dimensions of categories were developed in later interviews, the previous interview data was revisited for a comparison with new information seeking similarities and differences to understand the concepts.

***Asking questions of the data.*** Questioning was closely related to comparison as it assisted, contributed, or enabled the comparative process. Asking questions allowed for (a) sensitizing the researcher to the data, (b) providing theoretical insight, (c) addressing practical issues, and (d) guiding the research (Corbin & Strauss, 2008). For example, when data were analyzed in this study, questions resembling, "How does this nurse define the process she uses in caring for children who self-carry?" and "How does this compare to another nurses?" allowed the researcher to enter the data and explore deeper

meaning and angles. The questions could be as simple as, “What is going on here with this nurse and the self-carry practice?” and “What are the properties of the nurse’s decision with this self-carry practice?” These types of questions sensitized the researcher to the data and assisted in uncovering what the data was intimating. Pertaining to theoretical insights, questions related to relationships were utilized. For instance, “How does the school district’s self-carry medication policy relate to the nurse’s decisions in the school setting?” This question addressed relationships between the concept of policy and the nurse’s actions. Practical questions were directed towards research rigor, such as “Is this category saturated enough?” or “Which categories are poorly developed?” This line of inquiry was based on the data analysis. The final examination of the guiding questions included the types of questions used in the interviews, the broad opening questions as mentioned in the interview guide, and also queries about “Which documents should be gathered next?”

*Steps in analysis.* In addition to the techniques of constant comparison and questioning, this research incorporated the Grounded Theory research analysis steps and practices proposed by Corbin and Strauss (2008). These authors believed that data analysis need not focus on procedures, but instead allowed for analysis based upon the researcher’s intuition, permitting the analysis to flow instead of becoming preoccupied with procedures. This research was completed with this mindset with the following steps as a guide.

The first step with each transcribed interview or data element was to read it in its entirety to capture the sense of the interview and try to experience what the interviewee was feeling and saying. No notes in the margins were made at this initial reading. The

purpose was to sense the whole before breaking it into parts (Creswell, 2007; M. Sandelowski, personal communication, June 11, 2008). A summary of the interview was made at that point. Next, the interview was reread; open coding commenced as a process of labeling in the margins, hence the data were *opened*. These labels were names given to concepts identified in the data and represented phenomena (e.g., action, interaction, event, object) in abstract terms. Rather than returning and analyzing the labels, a microanalysis of words, lines, or sentences was performed in the form of comparisons and asking questions to develop the properties and dimensions of the concepts. When concepts emerged from the data, they were captured within more abstract categories. This categorization of concepts developed further into subcategories, where properties and dimensions materialized to explain properties such as when, where, why, and how. These categories evolved from the concepts, literature, and in vivo coding.

Open coding occurred line-by-line, with whole sentences, by paragraphs, or through evaluation of whole documents. Open coding and subsequently, axial coding, reassembled the data. Subcategories developed in terms of properties and dimensions in order to produce a more complete category. Relationships between categories and subcategories as well as relationships between major categories were developed with axial coding. The main purpose for axial coding was examining patterns within the data that represented what a nurse did or events that occurred when children self-carried inhalers.

Selective coding took the question, “What is going on here?” to develop interrelated concepts. Integration within selective coding involved selecting a main theme from the study of school nurses that identified a central or core category. Main themes

could be cultivated from the following phenomena: other related categories, information appearing frequently in the data, concepts abstract enough to be used in other substantive areas, perceptions that allowed for a fully developed product, impressions that could explain the data by encompassing the main point and variation, or those items related logically and consistently to the categories (Strauss & Corbin, 1998).

After integration and selection of a central category, the theory was refined. Categories found to be poorly developed at this stage were further developed by revisiting memos, raw data, or through theoretical sampling and further data collection. The theory was trimmed of certain categories if they were limited or didn't fit within the proposed theory. Validation occurred by examining the theoretical theme and comparing it against the raw data of interviews, policy, or other forms of data collected.

***Memo-ing.*** Memos were a major component of this research, assisting in the development of concepts and, ultimately, a substantive theory. Notes were written after each episode of data collection with the goal of moving from the raw data to conceptualization and theory formation. These notes were developed in terms of complexity, clarity, and accuracy as the research progressed. Within the memos, various coding procedures of open coding, axial coding, and selective coding unfolded. The planned memo-ing process included ON, analytic in-process notes, MN, and personal in-process notes. As the research developed, integrative notes or memos were also utilized.

ON reported observations in terms of the interview scene, body language, events, and the interview set-up process, often described as a typical component of a research *diary* and were made after every interview or document sampling. No interpretation was to occur within these notes. The goal was to develop concrete, thick, and substantive

descriptions. These memos were used as data for other memos where the content could be utilized in the analysis process.

Analytic in-process notes included early interpretations or impressions, then more refined concepts. Analytic hunches were addressed. Ideas, patterns, insights, differences, linkages or any other component from an analytical stance were also expressed in this note. These analytical notes incorporated various analytical tools (e.g., comparison, questioning) and included various steps of the coding process (e.g., open coding, axial coding, selective coding).

MN contained information on the researcher's reflection about the methods utilized. Decisions on how to proceed, reminders, deficits, and critiques were included in this memo. These MN could be described as a typical component of a research diary or audit trail made after every interview or document sampling.

Personal in-process notes addressed the researcher's self and stance and contained subjective reflections such as personal reactions to what the researcher was interpreting, including the researcher's intuitive thoughts, worldview, emotions, and feelings. The personal in-process notes also contained reflexive comments on how the reflections might have impacted research decisions.

As the research developed, integrative notes were incorporated into the analysis to address the complexity or relationship of concepts and develop substantive theory. These memos incorporated information from various memos connecting and developing ideas and relationships. Diagrams were utilized as visual depictions of relationships and theory. As with the fluid nature of grounded theory, the researcher discovered more efficient means or formatting of written analysis.



**Human Subjects Issues.** An application to the Institutional Review Board (IRB) at the University of San Diego was obtained and approved. The consent form can be found in Appendix C. Written consent from each research participant was obtained prior to collecting data.

## **CHAPTER IV**

### **FINDINGS**

This chapter describes the school nurse's decision-making and perceptions regarding the ability of children to self-carry inhalers in the school setting. Grounded theory was utilized to analyze these data, elicited from 20 participant interviews, and analysis of various documents. The findings addressed the main questions and proposed aims of the study.

#### **Participants**

Research participants were school nurses, licensed as registered nurses, and all female working in an Arizona metropolitan area. They incorporated 13 elementary schools and 7 high schools. The nurses ranged in age from 34 to 77 year ( $M = 52$  years). The number of years of school nurse experience ranged from 1 to 35 years ( $M = 9$  years). Five of the nurses had an associate degree in nursing (ADN), one had a diploma in Nursing, 11 had a Bachelor of Science in Nursing (BSN) degree, one had a Bachelor of Arts in Nursing (BAN) degree, and two had a Master of Science in Nursing (MSN) degree. The predominate model of school nursing was one school nurse-to-one school, except for one school nurse who was responsible for two schools. Elementary school nurses had a population range of 500 to 800 students while high school nurses had a population range of 1409 to 2600 students. Ten school districts were represented among the 19 public school nurses and one parochial school nurse. Table 1 describes the specific demographics of all 20 participants.

Table 1

*Demographic Information about Participants and Schools*

| ID | Grades    | School<br>population | Nurse:school<br>ratio | Age<br>of RN | Nursing<br>Degree | School nurse<br>experience<br>(years) |
|----|-----------|----------------------|-----------------------|--------------|-------------------|---------------------------------------|
| 1  | Pre K - 8 | 740                  | 1:1                   | 49           | MSN               | 20                                    |
| 2  | K - 8     | 800                  | 1:2                   | 48           | BSN               | 5                                     |
| 3  | Pre K - 8 | 611                  | 1:1                   | 54           | BAN               | 7                                     |
| 4  | Pre K-3   | 700                  | 1:1                   | 77           | Diploma           | 7                                     |
| 5  | K-8       | 765                  | 1:1                   | 77           | ADN               | 10                                    |
| 6  | K-6       | 650                  | 1:1                   | 45           | BSN               | 6                                     |
| 7  | Pre K-6   | 760                  | 1:1                   | 34           | BSN               | 2                                     |
| 8  | K-8       | 600                  | 1:1                   | 39           | ADN               | 1                                     |
| 9  | Pre K – 6 | 500                  | 1:1                   | 60           | BSN               | 6                                     |
| 10 | Pre K – 6 | 524                  | 1:1                   | 47           | MSN               | 1                                     |
| 11 | Pre K – 6 | 750                  | 1:1                   | 50           | BSN               | 11                                    |
| 12 | 1-6       | 700                  | 1:1                   | 67           | BSN               | 35                                    |
| 13 | K-5       | 740                  | 1:1                   | 48           | BSN               | 3                                     |
| 14 | 9-12      | 2600                 | 1:1                   | 40           | ADN               | 3                                     |
| 15 | 9-12      | 1600                 | 1:1                   | 63           | ADN               | 2                                     |
| 16 | 9-12      | 1800                 | 1:1                   | 50           | BSN               | 16                                    |
| 17 | 9-12      | 2600                 | 1:1                   | 34           | ADN               | 5                                     |
| 18 | 9-12      | 1409                 | 1:1                   | 55           | BSN               | 6                                     |
| 19 | 9-12      | 1475                 | 1:1                   | 49           | BSN               | 17                                    |
| 20 | 9-12      | 1700                 | 1:1                   | 51           | BSN               | 16                                    |

*Note:* ADN = Associate degree in Nursing; BAN = Bachelor of Arts in Nursing; BSN = Bachelor of Science in Nursing; MSN = Master of Science in Nursing.

## **The Interview Process**

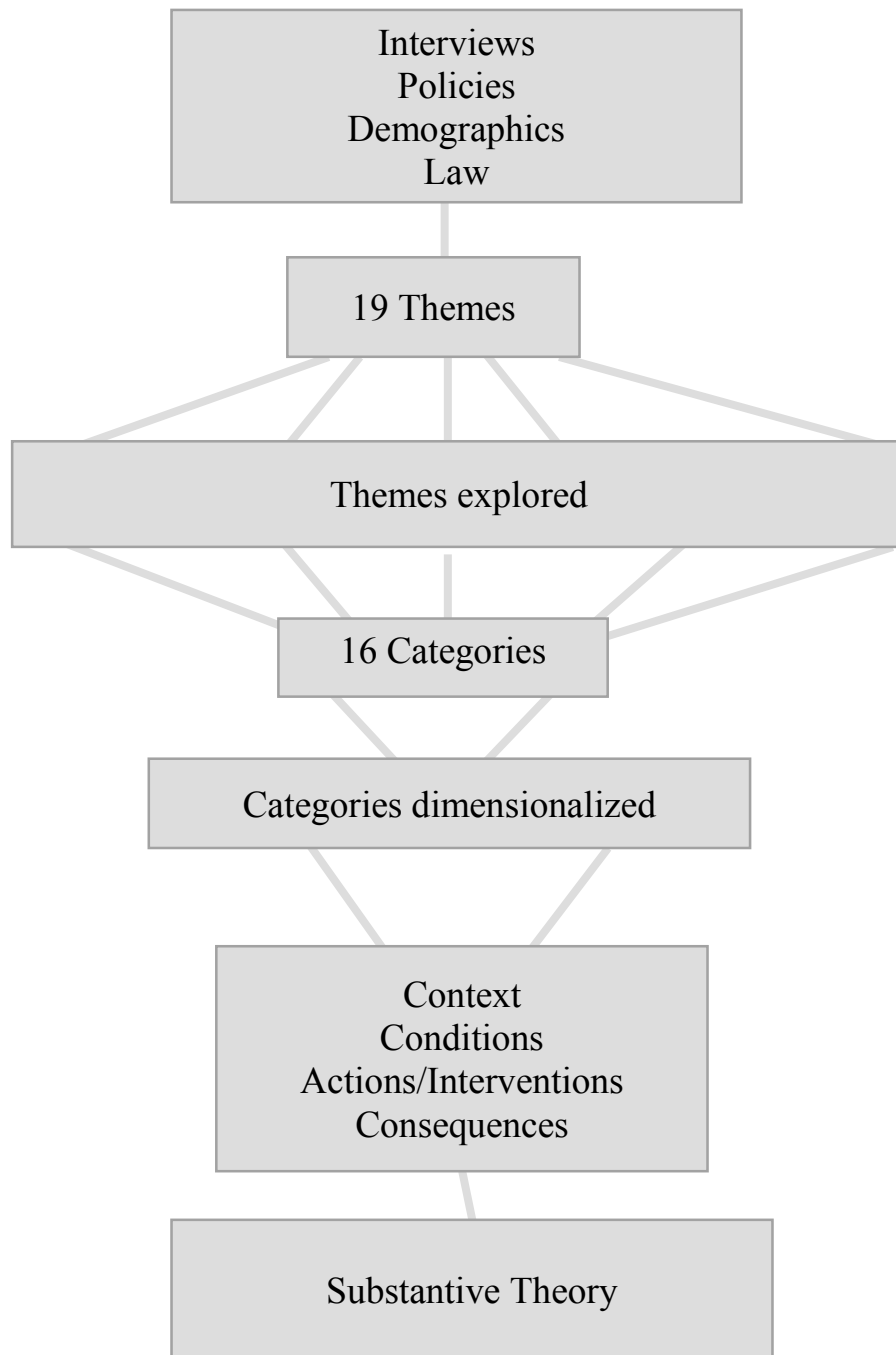
The participants in this study were recruited with IRB approval. The recruitment process included gaining permission to attend school nurse conferences and district school nurse meetings from school nurse leaders. At these meetings and conferences, the researcher presented the study and invited school nurses to participate. A sign-up sheet was circulated at these meetings and conferences. Those who signed up were called and readily agreed to be interviewed. All of the interviews occurred at the school nurses' preferred location. Typically, interviews were conducted at the school campus in the health office at the beginning or end of the day when student visits were low or students were dismissed for the day. One school nurse requested a fast food restaurant, in a quiet corner. The length of the 20 interviews ranged from 19 minutes, a school nurse who did not allow self-carry because third grade was the highest grade in her school, to 51 minutes. The majority of interviews lasted approximately 45 minutes. Interviews occurred between 2011 and 2014. All of the participants completed the interview process, from filling out the demographic data sheet (Appendix B) to participating in the interview itself. An interview guide was developed and followed throughout the entire 20 interviews (Appendix C). Each question was asked of each participant, although not in precise order, instead allowing the participant to speak freely and lead the discussion. After several interviews and concurrent reviews and analyses of the data, probes were added to the interview. This was consistent with grounded theory as the data drives the process. No follow up contact was made by the researcher to the participants after the completion of the interview. All 20 interviews were face-to-face, audio-taped, transcribed verbatim, and included as data for this study.

The school nurses were familiar with the researcher by way of the school nurse community or the presentation at meetings or conferences that the researcher offered regarding the research study. This allowed for an established rapport at the start of each interview. The consent form was completed, then the demographic data sheet was filled out by the school nurse as the researcher set up the recording device and interview guide. The respect for the school nurse's time was important but the primary goal was to give the interview process sufficient time for completeness. Some school nurses continued the interview after the recorder was turned off. This was captured in field notes by the researcher and added to the end of the transcribed interview.

### **Analysis of Data**

A substantive theory about how school nurses make decisions about children self-carrying asthma medication at school was discovered through analysis of multiple sources of data using grounded theory. Figure 1 offers a visual depiction of this process. Specifically, the transcriptions of 20 interviews, 20 demographic information sheets, 20 district policies, approximately 20 school policies, and Arizona laws were analyzed. The analytic process began with the identification of 19 common themes found among these data. Next, the themes were collapsed into a total of 16 categories. Then, the dimensions of each category were examined from various perspectives and cross-referenced in order to deepen understanding about how they were related. They were synthesized into a conditional matrix to explain the predominant psychosocial process revealed by the participants about their decisions and perceptions. The matrix was characterized by the context, conditions, actions/interactions, and consequences involved in this process leading to the discovery of a substantive theory that represented the school nurses'

decisions about children self-carrying inhalers in the school setting. This representation of the school nurses' decision-making process incorporated the varying perspectives that led to their decisions.



*Figure 1.* Data analysis process

## **Key Findings**

The context and conditions that influenced the nurses' decisions regarding student's self-carrying inhalers in the school setting, both positively and negatively, were critical to understanding this process. Given the context and conditions, the actions and/or interactions implemented by the nurses regarding the identification and care of children who could self-carry inhalers in the school setting were identified. From the nurses' decisions and actions, consequences were clearly discovered. Table 2 provides a summary of the conditional matrix constructed from the data analysis. The in vivo code under each matrix heading summarizes the key findings utilizing representative phrases spoken by the nurses themselves.

Table 2

*Conditional Matrix: A school nurse's decision-making with students: To self-carry or not to self-carry*

| <b>Context</b><br>"I have to let it go"  | <b>Conditions</b><br>"A little uncomfortable" to<br>"really uncomfortable"  | <b>Actions/Interactions</b><br>"In my decision factor"<br>(My deciding factors)  | <b>Consequences</b><br>"You need to do what you need to do"  |
|--|---|--|--|
| <b>Driving forces</b><br><i>Laws</i><br><i>Policies</i>  | <b>Accepting student characteristics</b><br><i>Behavior</i><br><i>Developmental issues</i><br><i>Impoverishment</i>   | <b>Nursing philosophy</b><br><br><b>Utilizing one's "Internal policy"</b><br><br><b>Guiding praxis</b><br><br><b>Assessing students' ability to self-carry</b> | <b>Manipulating the situation</b><br><i>Secrets</i><br><i>Talking parents out of self-carrying</i><br><i>Using the paperwork requirement</i> |
| <b>School Characteristics</b><br><i>Philosophy of the school</i><br><i>Size</i><br><i>School nurse model</i><br><i>Standing orders</i> | <b>Trust</b><br><br><b>Knowledge deficits</b><br><i>Students</i><br><i>Parents</i><br><br><b>Supportive teachers</b><br><br><b>Safety net</b><br><br><b>Control</b><br><i>Parental control</i><br><i>School nurse control</i><br><i>Control by others</i> |  | <b>Micromanaging</b><br><br><b>Fostering independence/empowerment</b><br><br><b>Letting it go</b>  |

**Context.** Several contextual issues influenced the school nurses' decisions whether to allow or not to allow students to self-carry inhalers in the school setting. The overall consensus among the nurses was "*I have to let it go.*" This mindset was influenced by driving forces such as state laws, policies, and school characteristics (e.g., size, philosophy, ratio of school nurses-to-students model, standing orders).



***Driving forces.*** The driving forces that influenced the nurses' decisions to support self-carrying was state laws and school policies. These forces shaped the nurses' perceptions regarding decisions about the ability of students to self-carry inhalers in the school setting.

***Laws.*** Many nurses recognized the laws supported a student's right to self-carry. Although the nurse might not agree, she had to acknowledge and allow the practice. As one school nurse commented "*truthfully, I don't make that decision.*" Even if the nurse believed that the child was too young, the parent could retort with "*well, it's a law that my child can self-carry.*" Commonly, the nurse and district conceded and allowed this practice.

The state law has incorporated two main players, the physician and the parent. In the law, it states that students could self-carry the inhaler with their name on the prescription and on the medication container or device as well as annual written documentation from the parent authorizing the student to self-carry. Following this procedure allowed for a school's release of liability within the good faith covenant of the law. Many times the parent was the deciding factor based on the law; "*the parents come in and tell me the child's gonna carry it.*" This left the nurses without any option other than allowing self-carry when it came down to the parent's desire.

School nurses in the study had a hodgepodge grasp of the law irrespective of school setting. Of the 20 nurses, five were familiar with the self-carry law but none were able to share the specifics of the law. Answers were often short, such as "*I know there's a law*" or "*Yeah, I had a copy of it. That's how we started this whole thing a few years ago. It's epi pens and inhalers.*" Participants were unable to elaborate or articulate specifics of

the law when probed. Fifteen nurses were not familiar with the self-carry law. As one nurse admitted, *“If there are any, I am unaware of them . . . I don’t know Arizona laws. I should but I don’t”* and another nurse reported *“I am not aware of any.”* One nurse stated an awareness of other laws related to medications, but not specifically the self-carry law, *“No, other than – the only law would be the fact that they can’t be handing it (inhaler) out to anyone else. This is their medicine, for them.”* When queried, eight nurses did not mention laws as guiding their practice. No participants mentioned any type of federal act or legislation addressing the self-carry issue.

*Policies.* Nineteen of the school districts’ self-carry policies were identically worded and linked to the actual law on the state’s education website. The school districts’ self-carry medication policy could be found on their websites. Only one of the nurses interviewed articulated this; the other nineteen nurses were either not familiar with it or did not share this information when probed. Policies were located by the researcher through searches of each district’s website for the self-carry medication policy. The parochial school district was one district that did not have the state law linked to their policy.

Commencing with the district level policies that were verbatim copies or links to the state law, each school then had a policy or permission slip that allowed children to self-carry inhalers. Ten elementary schools and one high school had school-level policies in addition to the district policy that allowed students to self-carry. These policies could be located in the student handbooks. Three elementary schools and six high schools did not mention the self-carry policy in the medication section of their student handbooks. These schools did provide permission slips in lieu of the policy for self-carry; however,

these permission slips were not in the student handbook. Eight of the elementary school nurses were aware of the school-level policies regarding the self-carry practice; nevertheless, all eight kept this information a secret. Five elementary school nurses were not familiar with the school level policy. For the high school nurses, one was not aware of the school-level policy, but instinctively followed the main goal of the policy allowing students to self-carry within her practice. Three of the high school nurses did not follow the permission slip policy; the closest form of a school level policy. One example was allowing the self-carry practice without the doctor signature as requested on the permission slip, *“I don’t have physicians sign off on that sheet because that was a barrier for me getting my carry-on-own consents. So I do not require a physician’s signature”* Another nurse described what happened when a nurse followed the policy or permission slip requirements and another one did not,

*I feel that the nurse before me was a little way bigger of a stickler on the self-carrying, so it kind of did a backlash where now nobody wants the nurse to know that they have an inhaler because they don’t want to deal with the paperwork. So now I’m having to say, it’s okay, I’ll make you only do this amount, because I’d rather just know instead of it being a big obstacle for the parent to feel like they have to fax in an entire medical record.*

School nurses were involved with the self-carrying process at the school level as they were the ones to facilitate the paperwork, assessments, and education. Often they needed to sign on to this process allowing self-carry or ensure the paperwork was in order as required by their district. Despite this perceived sense of marginal control, ultimately the law stated that the student was able to self-carry with just a prescription label and

parental permission. Some nurses realized the need to concede and allow self-carry even when other steps and signatures were required in order to implement the policy. One nurse expressed this by saying she had to let go of her control and belief at times to abide by the law and policy, *“I have to let it go . . . I can do what I can do. The law says that they can carry it and I deal with whatever happens after that.”*

***School characteristics.*** Varying school characteristics impacted the nurses’ decision to support or discourage the self-carry practice. The philosophy, size, school nurse model, and standing orders were the main components.

*Philosophy of the school.* Comments made by some of the nurses suggested that the school’s philosophy dictated the self-carry issue to some extent. The school’s philosophy surrounding testing, educational standards, and absences were discovered in the data. Each of these areas were mentioned by the school nurse participants as weighing in on the self-carry issue.

The focus on mandatory testing in schools discouraged needed asthma education to support the self-carry practice because there were not enough hours in a day to spend on asthma management along with core educational content. One nurse explained this issue, *“and it’s so hard because the whole environment at school is so channeled in on testing that they don’t want to give the kids up for something like that.”*

There was also a need for students to be in the classroom as much as possible because of the educational standards governing the school’s or the students’ educational needs. This was specifically stated as a benefit of the self-carry practice by six nurses who believed that self-carrying would promote increased class time and the student’s educational process. One elementary nurse simply stated, *“You know with the standards*

*and everything now, they want to keep the child in the classroom as much as possible.”* A high school nurse also mentioned the importance of educational considerations by declaring, *“in the education realm you always have to consider their educational process as well as their medical.”* As a result of the schools’ philosophies surrounding the testing focus and educational standards, some participants reported that offering asthma education to support the self-carry practice in schools would not be appreciated by school officials. As one nurse expressed,

*And then uhmm I’ve had the Open Airways at school but it’s too few . . . So it would have to be after school as there’s just not enough hours in the day but that would be an excellent program too. But yeah that’s the big thing for me, is just they need more education so they can understand it.*

All of the participants reported that self-carrying posed problems to some degree (e.g., poor asthma management, increased absences for asthma exacerbations, medical visits). The lack of asthma educational opportunities due to the testing focus and educational standards equated to poorer asthma management by students and increased absences that could negatively impact testing results and attainment of educational standards. This was seen as a barrier to self-carrying inhalers and made it difficult for elementary school nurses to support the practice.

The high school nurses mentioned the attendance issue as impacting self-carry practice in terms of asthma management and school success. The attendance philosophy of the high schools was mentioned by three of the seven high school nurses. The attendance policy was strict in terms of absences, but there were accommodations when the student had a chronic illness such as asthma, allowing them to miss more days. This

was a positive factor that supported the nurses' decision to allow students to self-carry on the high school campus. As one nurse clearly explained,

*They are very poorly controlled, then we have a policy that's a chronic health form, which states they have a chronic health. They are going to miss 20 extra days beyond the 11 that they're allowed per semester. The only thing that policy does, it's an attendance accommodation, this chronic health, and it basically states you will not be dropped because of your chronic illness . . . So does the attendance policy work with these kids? Absolutely.*

Alternatively, elementary school nurses did not mention attendance and chronic illnesses such as asthma.

*Size.* Size in terms of the physical campus size and the size of the student population was shared by the nurse participants. These issues were discovered as contributors to the self-carry decision-making by the participants.

Campus size was related to the participants' perceptions about self-carrying inhalers or keeping them in the nurses' office. Nurses practicing on small campuses, more common in elementary schools, promoted the belief that self-carrying was not needed because nurses could get the medication to the students more quickly, instead of students coming to the nurse's office when distressed. Ten of the school nurses reported that small campus size superseded the need for students to self-carry as the nurse was easy to access. One participant stated, "*many of the kids will have an asthma attack after recess or P. E. and I'm right here . . . I can run it up to them quicker than they could probably get it out of their backpacks.*" Larger campuses such as high schools provided the option for students to self-carry as immediate access was best as it would take time

for the nurse to reach the student. Five of the school nurses said that large campus size supported the self-carry practice. One participant declared,

*I know that there's a law but even if there weren't, I would fight for something because my office is so far away from the rest of the campus that there's no way I could get to somebody . . . somebody can't breathe, me getting all my equipment, finding – either running over there or finding a gator to take me over there, that's delayed time. So I would much prefer that they self-carry.*

The size of the student population was also a consideration. Smaller populations provided a manageable workload that made it “*realistic*” for the nurse to manage all inhalers in the nurse’s office. This smaller size was prevalent in the elementary school with the population range of 500 to 800. Two elementary school nurses mentioned the small population as a reason to keep the medication in the nurse’s office instead of self-carry. One nurse expressed both the small campus and population size implications this way,

*It is their asthma meds, it is insulin and honestly, I keep all of that right now because they test with me too. If this was a big high school campus, I think that would be a very different thing. I think absolutely then I would want them to have this stuff but the size of the campus and the number of students, it's realistic for me to be able to meet that need at this time.*

In addition to these two nurses who considered the importance of population size, another eight elementary school nurses mentioned that any population size at all warranted the need for the nurse to keep the medication “*under lock and key*.” The school setting where there were students on campus in addition to the asthmatic student put all students at risk

for stolen medication, abused medication, sharing of medication, and more. Overall, these nurses discouraged the self-carry practice for the safety of the asthmatic students and others on the campus. Some comments made by nurses to demonstrate this concern were:

*It's not like being at home. I have 400 other kids floating around the school, so if you really wanted to know my opinion, unless your child understands this, then no, he's actually gonna house it here in my health office;*

*Somebody else getting a hold of it, that's our major, major concern is another student getting a hold of it. Could another student have complications if they were to get a hold of it? Increased heart rate and that kind of, they're at that age group where they're starting to test the waters of medications and stuff, so that's a little scary;*

*The only thing that makes me nervous is having meds in the classroom where other kids can get at them.*

Participants reported that when school enrollment was large, the nurse had to let go of the need to administer and manage students' asthma because of the amount of work needed to care for the population. Three of the high school nurses clearly expressed workload as a reason that self-carry was supported. As one nurse in a school with 2,600 students expressed,

*Since it's just me, if I have, I mean on the average I'm going to get like 50, 60, kids down here a day. Well, like closer to 70. It's just, I need this, I need this, I need a tampon, I need this. And I mean I would hate for a kid that really does know how to use their inhaler, they know what to do, they're completely fine with doing everything, if they need to do something on their own, I'm okay with that*



*because it is pretty busy down here and I would hate for them to – I mean I want to give them the benefit of the doubt that they can police themselves out there.*

*School nurse model.* The fact that 19 of the school nurses interviewed for this study practiced within a model of one school nurse per school, coverage of multiple school sites was not an issue. Overall, the elementary school nurses stated that the self-carry practice was not necessary as she would always be available. For example, one nurse expressed this by declaring, *“I’m always here so it’s not like I have to share any others so I’m always physically on campus.”* The one school nurse who covered two schools did not mention this as an issue with the self-carry practice.

*Standing orders.* Concurrently, the medication process utilized by the school district regarding administration of daily medications (i.e., pro re nata [prn] medications, standing order medications) determined the participants’ perceptions. Of particular importance to the self-carry issue were standing orders. Nurses shared their standing orders or at least mentioned them. It was noted that if the district had standing orders, none of them included asthma rescue medications in the form of an inhaler or nebulizer. The number of students who had access to back-up inhalers in the nurse’s office demonstrated that there were no standing orders for rescue breathing medication in the form of inhalers or nebulizers. Of the 11 participants who reported students self-carried on their campus, three reported no back up inhalers and one reported 50% of the self-carry students had back up inhalers. The remainder of the 11 participants reported percentages between this range, with the next highest at 20%. If there were standing orders for such a medication, the percentage of students with access to a back-up rescue medication would be 100%, possibly allowing support from the nurse for students to self-

carry. None of the nurses interviewed were willing to get standing orders as a means to help students get access to back-up medications for self-carry. Standing orders for back up or rescue medications were difficult to obtain. One of the participants explained the complexity,

*We'd need standing orders. That's part of the reason we don't have any stock meds here. Yeah, I don't think having it as a stock – a stock might work if we had it for an SVN (small volume nebulizer) treatment – somehow if we had a standing order from a doc, who was willing to go at risk for all 8,000 of our kids and say if the kid carries, but really, we're very fortunate to live in -----, where the EMS response time is 5 minutes, less if they're on our tennis courts. So if I have a kid who I know has asthma, I know doesn't have an inhaler at home, is not gonna get a provider and is actively wheezing, I EMS them.*

Another nurse voiced her frustration about the lack of standing orders for rescue medications with this comment,

*Now, why can EMS paramedics assess and determine a need for somebody to receive medication, but we can't, in this situation here? So I think that – we have standing orders for epi pens, we have standing orders for oxygen. We have standing orders for all these medications that, as a nurse, we have to see if there are any contraindications with health before we administer, just like you should be cautious in giving ibuprofen to an asthmatic. So it's - why is that not available to us?*

One nurse actually disregarded the need for standing orders and dealt illegally with this lack of standing orders and back up as she declared,

*Again, if push comes to shove, I have an extra inhaler that I'm not above saying there's an inhaler in there why don't you get that out and hand it to the student. So it's mainly as a backup. I like to – reinforcement so to speak.*

In summary, there were many contextual factors influencing the self-carry process. State laws, district policies, and individual school characteristics helped determined the decisions reached by the participants. Most of the school nurses found themselves in a quandary between their own beliefs and policy. Opting to “*let it go*” was evident from an analysis of the extensive interviews and documents available to this study.

**Conditions.** Conditions both positively and negatively influenced the nurses’ decision to support self-carrying inhalers in the school setting. An important condition identified by the participants was the range of feelings, from being “*a little uncomfortable*” to “*really uncomfortable*” about allowing students to self-carry. Conditions that influenced the nurses’ comfort level were accepting student characteristics, trust issues, knowledge deficits, supportive teachers, safety nets, and control.

***Accepting student characteristics.*** Many student characteristics influenced the nurses’ decisions to allow self-carrying. The characteristics included behavior, developmental issues, and being impoverished.

***Behavior.*** Student behavior influenced the nurse’s decision to support or not support the self-carry practice. Maturity and responsibility were mentioned in multiple ways and critical as a “*child would have to be totally mature and responsible.*” This

responsibility and maturity extended beyond their asthma. Nurses assessed other areas for behavior that demonstrated responsibility. As one nurse stated,

*I'm talking about responsibility. Are you responsible enough to come get your stuff when need be and not goof off while you're doing it, getting out of class? Are you responsible with your own self-care? Even a Band-Aid, if they can take care of a Band-Aid, I'm pretty sure they can take care of other health – or be aware.*

Students who did not over refer themselves for headaches and stomach aches would make good candidates to self-carry, according to the participants, as these students would not tend to overuse their inhaler. The ability to be serious and make good judgements was valued as a behavior that warranted the opportunity to self-carry. Examples included no smoking or experimenting with cigarettes, taking care of oneself with general things, such as needing Band-Aids, and doing school work. Getting good grades and being involved in clubs were other actions that nurses mentioned as behaviors they sought in order to be comfortable with self-carrying. However, many of their asthmatic students did not demonstrate these behaviors, even though parents still wanted their children to self-carry. According to all 20 participants, irresponsible students were the norm leading them to feel uncomfortable with self-carrying. As one nurse stated “*Number one, kids that I've had in the school have not been the most responsible, even the older ones, in self-carrying.*” Another behavior that bothered the nurses was the tendency of some students to follow the lead of other students when it came to making important decisions. As one declared,

*Then there are others that are so dependent on their friends' opinions of who they are, almost to the exclusion of everything else. Because their friends don't study,*

*they don't study. Because their friends ditch school, they ditch school. Then I'd say no. These kids – that child will not do it because if their friend says anything about them taking their inhaler, they won't do it.*

*Developmental issues.* Student behavior and development are closely related. Overall, elementary school aged children self-carrying made nurses uncomfortable to varying degrees because, as one nurse stated, *“even the most responsible child in the school will still be a child.”* School aged and teenage students were seen as having limitations with the decision-making process when they self-carried inhalers. One nurse explained this clearly, *“You can see that they are not thinking things through. They think through the moment of what they wanna do, and then they don't think beyond the moment about the consequences.”* Overall, the participants thought that the students were “*egocentric*” and experimenters, with specific concerns based on their grade in school.

The nurses reported that students in kindergarten-to-third or fourth grade were good with following rules about the inhaler administration process, but not mature enough for decision-making about when to use it or seek care based on their symptoms. The participants frequently reported that children this age were curious, presenting a safety issue on campus with sharing, lost medications, and being a copycat. One nurse shared a story that brought this to light,

*I had a little one before I came to work one morning with a little bottle going from teacher to teacher to the records secretary, “My mom says I'm supposed to have these eye drops in my eye. Can you help me put these eye drops in my eye?” . . . And when I came in . . . they weren't eye drops. They were steroid ear drops that she had found somewhere. She'd seen other kids having eye drops.*

Overall, the nurses were uncomfortable with children this age self-carrying because of their curiosity and poor judgment. According to the nurses, students often believed that if other students used it, it could be good for them as well.

Once students reached the fifth or sixth grade, some nurses believed that they were “*possibly*” mature enough to self-carry, while others did not. One participant stated, “*they really don’t often think*” and show a lack of control and foresight, making asthma management difficult for students this age. From the nurses’ perspective, this appeared to support a need to keep the inhaler in the nurses’ office. Furthermore, the nurses noted student behaviors, such as not coming to the nurses’ office when needed or not wanting to miss recess time, games, or class when health care was needed. This knowledge made the nurses uncomfortable about self-carrying, assuming that these tendencies would lead to poor asthma management instead of the opposite. Other developmental behaviors noted in this age group were often noted by the participants as being problematic. For example, one nurse clearly stated “*They aren’t good about wearing their glasses, they aren’t good about eating breakfast. It’s the age. It’s the age*”

Students in seventh and eighth grades were reported by the nurses to have difficulty self-carrying because of peer pressure and the need to fit in, not wanting to be different. As a nurse clearly articulated,

*You’d have to feel confident that they’re willing to overcome the whole peer pressure, adolescent social group forces that are effective on them. So is she gonna take her inhaler out when she needs it because she’s having an asthma attack? Is she gonna take her inhaler out daily at 11:00 because she’s supposed*

*to or because her friends are pulling her one way and she doesn't want – or there's a cute boy looking at her this time.*

According to the participants, these tendencies prevented the students from managing their asthma appropriately. Also, students would sometimes participate in dangerous activities with friends and use the inhaler as a “*safety net*” to do what they wanted, such as experimenting with cigarettes despite having asthma.

High school students wanted to be independent but were “*in that in between place*” according to one participant. Overall, the high school nurses recognized this and suggested that they have to self-carry and learn. The belief that the student was in a “*great place now*” with school nurse support while they self-carried their inhalers allowed the nurses to help prepare them for the “*big bad world*” when they are responsible for their own healthcare after high school. All high school nurses still voiced concern about the idea that students this age view themselves as “*invincible*,” as one participant shared,

*I don't think they think it's dangerous. I honestly don't think they grasp the importance of when that trach and everything shuts down and you can't get air. They just don't.*

The mentality with high school-aged students was that, if a little is good then more must be better “*I have had kids come in and say they've used their inhaler 10 times.*” They reported that students this age would often act “*impulsively.*” Despite these concerns, all seven nurses at the high school level knew that their students were almost adults and needed to be able to self-carry the asthma medications.

In summary, there was a range of discomfort expressed by the participants based on the developmental issues of the students. Nurses believed these feelings were based upon concerns over the students' safety and proper asthma management. Overall, elementary school nurses preferred to manage the inhaler and high school nurses encouraged the self-carry practice despite some issues. The high school nurses thought the need for independence was paramount.

*Impoverishment.* Children in poverty tended to be at a disadvantage when it came to their ability to self-carry their asthma inhalers. This was noted as a contributor to the nurses' discomfort. Children in poverty usually obtained their healthcare in urgent care settings, emergency rooms (ER), or relied on the school nurse more than usual. One participant shared, *"I see quite a few that manage their asthma in the ER and so I have to be their primary care practically."* This reliance of care in the ER was reported as rushed, with limited time for education by the providers. Impoverished students often could not access healthcare due to barriers (e.g., lack of transportation, working parents, no working phone number, monetary, insurance). Often the school nurses found primary care solutions for health care, but barriers prevented access. Regarding Medicaid, it often ran out or reapplication was necessary, and when this didn't occur, students were often without inhalers. Frustration was noted by one nurse,

*My Medicaid population has other barriers, in that in Arizona, you have to reapply every 6 months for Medicaid, so it almost seems like you've just gotten your kid qualified, and now they're gonna be expired. Arizona has erected millions of barriers to people for healthcare. Don't get me started. But all of that leads to not having an open scrip, not having an established PCP, not being able*



*to quickly get your kid to an inhaler if they needed it. I can't tell you how often I have just wanted to hand a kid my inhaler. It's often.*

Children from impoverished environments often did not have access to inhalers. The participants reported that these students would try alternate therapies and would borrow inhalers from other family members, such as a parent's or sibling's inhaler. As one nurse expressed, *"Whether it's borrowing someone's or trying over the counter. Some of them – once in a while, I'll have a student who will just stick with herbal stuff."* Because of the number of impoverished students, some nurses wanted to house the inhalers in the nurse's office so they wouldn't be lost. Other nurses supported the self-carry practice because it was the students' only inhaler and she didn't want the inhaler left at school.

**Trust.** Trust was a condition the nurse often discussed concerning self-carrying inhalers. This trust equated with a feeling of being comfortable, *"I don't trust kids right off the bat"* and *"after we get to that comfort stage, then I will let them self-carry."* The sense of trust was a desired prerequisite to self-carrying in elementary schools; if that trust was not present, the nurse wanted herself or another adult (e.g., coach, PE teacher) to be in charge of the inhaler. Trust took time to develop, as one nurse stated, *"Let's spend some time together so that I am comfortable and you're comfortable that you're doing it right and that you're understanding asthma."* The nurses wanted to trust that the students could correctly manage their asthma safely. Once the nurse felt comfortable with trusting the student and the student was comfortable with managing their asthma, *"we'll let them go"* to self-carry on campus. This was less likely in elementary schools, as only 4 out of 13 elementary schools had students who self-carried. Trust was not directly found in the high school nurses' experiences. All seven high school nurses encouraged the self-

carry practice, but it was noted that a few still felt distrustful or expressed feeling uncomfortable about the students' ability to self-carry safely.

**Knowledge deficits.** Knowledge deficits regarding asthma and the self-carry process among students and parents determined whether the nurses' decided to support the self-carry practice. Parents who were more knowledgeable had children who were similarly familiar with the safety of self-carrying inhalers, but primarily, the data uncovered the nurses' concerns that parents and students lacked knowledge regarding this issue.

**Students.** Students with little knowledge about their asthma and how to manage it contributed to the nurse's discomfort with self-carrying. Lack of understanding contributed to students' missing worrisome signs and symptoms, improper medication administration, overuse, and overall inadequate proper asthma management. Educating students took time and coordination of outside resources and programs. When the nurses' workload was too great to facilitate this education or the school philosophy did not support the time needed, then the student's asthma educational needs went unmet, thereby indirectly increasing the nurse's feelings of discomfort with self-carrying. This education often needed to be repeated daily in order for students to operationalize self-management. This requirement was a common finding as expressed by one nurse,

*Some of my younger ones – first graders that are gonna go into second grade, that I will have had my influence on for years and years and years, I could see in an older school setting – high school – self carrying and being okay with it because I will have worked on them every single day for X number of years.*

The nurses reported that some students who secretly self-carried missed educational opportunities since the nurse would often assess the student and teach them about their asthma before they would allow them to self-carry. Students who would self-carry had fewer educational opportunities by the nurse than students who did not self-carry. This was another reason many nurses wanted to have inhalers in the nurse's office,

*But the cons is not knowing when a kid is actually struggling or having serious – especially if they were self-administering on a daily basis when that should have been a call to the parents to say “this kids needs to get in, probably needs a steroid burst, probably needs more than a rescue inhaler every day.” It would just not – it would not afford me to be able to do the educating that I need to do as the school nurse ‘cause that’s a big part of the job is making sure that kids understand why they’re having to do what they have to do.*

With many students and especially those who were impoverished, nurses thought there was a greater educational need by the school nurse because they did not have access to regular asthma care through a primary care provider, or better yet a pulmonologist, but instead received care in urgent care centers and the ER. As one nurse stated, “*I don’t think there’s enough education when the inhalers are given out. That’s what I find, anyways, specifically with my population.*” Another nurse expressed similar concerns with proper inhaler use education,

*I will say “well that’s great, did the doctor show you how to do it?” No. Because where the school is, is a federally designated underserved area so if you’re waiting in the waiting room for 2 hours, you’re not gonna get shown how to use it.*

*Parents.* Parental asthma management knowledge deficits contributed to the nurses' discomfort with the self-carry process. All 20 participants expressed concerns with parental knowledge deficits that made it difficult to support the self-carry practice. One nurse expressed the magnitude of this issue,

*There's so much education out there, so there's always education. There's always a way to get it, like for example, pharmacy samples. So I think the biggest challenge I've seen in my career is just parents.*

In the high school setting, despite the expressed concerns of limited asthma knowledge, nurses supported the self-carry practice. Overall, the nurses believed that preparing the high school students for independence and self-care was paramount. Elementary school nurses expressed that limited knowledge was a concern and wanted to keep the inhaler in the nurse's office. The parental knowledge deficits included not knowing when to seek care, overmedicating their child, and understanding asthma as a chronic condition. These noted deficits impacted the elementary school nurses' decisions. A few comments expressed these varied concerns,

*I told one parent the other day, I said, "You know, he comes in here too much. If he needs an inhaler more than three times a week, he needs to see the doctor because his asthma is not in control. She says "really?" So there's education that goes along with it.*

*I had, well, one little second grader who didn't self-carry, very bad asthmatic, not on any kind of routine medications and parents treated with Albuterol at home and when he got really bad, which is on a daily basis, treating him every 2 hours with his nebulizer. And then didn't have an in-, well had an inhaler here at*

*school, but didn't work as well as the nebulizer did but mom wanting to bring his inhaler in at the same time and have me use the inhaler with his nebulizer. I'm like, well, it's the same medicine, I can't do that. Unfortunately, he died this summer from an asthma attack in the middle of the night.*

*This was a parent that wanted the child to use it as needed, whenever they chose, as frequently as they chose, and they had nebulizer treatments in the health office and there was a big conflict because it was used too frequently and the child's symptoms were exacerbated rather than improved. So they, the parent, in the parent's mind, you just use it whenever you want. When it doesn't work anymore, then you get a nebulizer treatment on top of it.*

According to the participants, the overall knowledge deficits of the parents was they did not understand the “gravity” of the chronic condition of asthma. This was revealed in all 20 interviews and declared in a variety of ways. One nurse expressed it this way,

*A little bit more proactive in educating specifically my younger kid's parents on the need for getting their kids educated and getting them educated, because I don't think the parents understand it either, how bad or how quickly they can go.*

Parents often told their children to keep the self-carrying of the inhaler a secret from school and the nurse, as reported by seven of the participants. The elementary school nurses saw this as a parental knowledge deficit regarding the seriousness of asthma and contributed to an unsafe self-carry situation. These secrets contributed to the nurses' lack of trust with parents being the sole decision maker with the self-carry process. Some descriptions of this issue were,

*Well I think mom usually sends it as a PRN type thing. "Just in case you need it, here's your inhaler. Put it in your backpack or your pocket." I can get, they just don't know because it's basically ignorance. They don't know what they should, just for the safety for their own child and the safety of other children.*

*I mean, that's really hard to do any, really, any kind of education if I don't know they have it. I think it's parents not knowing and parents who are like, here, put this in your pocket, don't let anybody see it. I mean, that's definitely very challenging.*

Parental knowledge deficits regarding the importance of communication with the nurse as a means of effective asthma management was noted in the data. Communication was mentioned often as a barrier to safe self-carrying. One nurse expressed this issue,

*Most of the time, we don't have a good phone number. They work 100 jobs, or the kid has been threatened to within an inch of his life not to disclose how to reach mom during the workday, so I do not communicate with parents nearly as much as I did in elementary school.*

In the high school setting, the nurses did not express the secrets as a major concern.

Overall, the high school nurses wanted students to self-carry. One nurse shared this experience, *"I'd rather you carry an inhaler and me not know it than you not to have an inhaler at all because my only choice is to call 9-1-1."*

**Supportive teachers.** All the nurses reported teachers as being critical in the self-carry process. Teachers were reported as being the nurses *"eyes and ears"* on campus and assisted the nurses in keeping the kids safe when students self-carried. When nurses expressed a need to document medication doses that a self-carry student administered,

teachers were described as a “*reporter*” for the nurse. Teachers provided some comfort for nurses in the self-carry process. Participants reported that “*good*” teachers looked out for students on campus, providing some type of supervision. Teachers would “*keep track*” of the self-carry students and if rules were broken (like sharing) the teacher would report it to the nurse, “*Teachers are very observant . . . they’re also watching, always vigilant.*” Teachers would also report self-carrying when not approved so the inhaler could be “*confiscated.*” Teachers were the adults with the students, watching them and acting as the gatekeeper to the nurse. Physical education teachers would observe the student and make adjustments if necessary, like limited activity. Some teachers were not “*conscientious and well informed*” in supervising the self-carry process in the classroom which the nurses often felt was needed when the student self-carried.

Within the high school population, athletic trainers were mentioned by the participants as a supporter of the self-carry practice. They were present during after school sports primarily for injuries, but would sometimes communicate asthma issues to the nurse. The athletic trainers allowed students to self-carry inhalers as the trainers were not allowed to administer inhalers. Overall, this teacher and trainer support decreased discomfort within the nurse when a student self-carried. The norm was to still forbid the practice, if possible, in the elementary school but not within the high school. When students did self-carry in the elementary school, the teachers assisted in decreasing the feelings of discomfort with the nurses.

***Safety net.*** A safety net was a theme that emerged as a means to safe self-carrying. Safety net in the form of a back-up inhaler, asthma action plans (AAP), nurses

as a resource, and the emergency medical system (EMS) was shared by the participants as a part of the decision-making process with the self-carry issue.

The most prevalent safety net mentioned by the participants was student access to a backup inhaler or small volume nebulizer in the nurse's office. One participant stated, *"I always asked for it, but a lot of times, it's not feasible for the parents, whether it's financially, or if they chose not to do it."* Few students had back up inhalers despite the request from the nurses. Eleven schools reported students who self-carried, and three schools had no back up inhalers. Five schools had low percentages of back up inhalers at 1%, 4%, 12%, 20%, and 50%. Three schools did not report how many students self-carried but reported the backup inhalers at one, eight, and one for student populations of 1,700, 2,600, and 1,800 respectively. According to the participants, the lack of a backup inhaler caused impoverished children to self-carry more than children who were not impoverished. At the elementary level, many nurses and some parents preferred the inhaler be kept in the nurses' offices but impoverished children needed to self-carry because they only had one inhaler or had to share an inhaler with other family members. A nurse explained it this way,

*Most parents prefer . . . for me to have it. Yes, you know, the ones that self-carry, those are the ones that can't afford more than one inhaler, so they need these inhalers to go home, So that's why they're self-carrying it because they got to come here and then they go home and back and forth and if they leave it here they don't have anything at home.*

The safety net of a backup inhaler in the nurse's office often provided some comfort with the self-carry process. This was expressed by one nurse,



*I've had a couple times this year – which it's nice – it relieves me – where a student had forgotten their medication at home. They'd come in 'cause they knew they had a backup in my office. So it has been helpful.*

According to the participants, asthma action plans (AAP) were part of the needed safety net to support self-carry. They were critical and recommended for optimal care of asthmatic students; however, the AAP was more often missing than not. The lack AAPs from the students' health care providers was a missing piece of information the nurses frequently requested when they cared for their asthmatic students. As the students got older, these AAPs were obtained less by the nurses.

The nurses themselves identified with being a safety net for the students who self-carried. Overall, the nurses realized they had the appropriate knowledge in managing asthma. Critical thinking was mentioned and applied when supporting a student with asthma who self-carried,

*It's kind of doing that critical thinking piece of this is what I'm seeing. This is what they're able to tell me. Make things happen now. You kinda have to sort out okay, what's more of an anxiety attack, and what's really for real, they really, really can't breathe because they just can't . . . It's a very fine line.*

Many participants, particularly in the high school setting, realized their supporting role as a safety component in the self-carry process; one of the high school nurses' main roles.

As one nurse explained,

*Just to be their back up if they need it. I'm here as an aid to them if they – the inhaler runs out, let's call mom immediately, trying to get them to calm down until we can get help here, that will help a lot. Again, if push comes to shove, I*

*have an extra inhaler that I'm not above saying there's an inhaler in there why don't you get that out and hand it to the student. So it's mainly as a backup . . . reinforcement so to speak.*

The EMS, activated by dialing 9-1-1, was a safety net for the student when the student self-carried and a breathing emergency arose. This reliance on the EMS was critical with the self-carry process and sometimes difficult, even “scary” as declared by one nurse,

*They don't realize they're as compromised as they really are. They keep pushing, pushing, pushing, pushing, until it's beyond a simple two puffs on the Albuterol inhaler. They need something more. They're total status asthmaticus. That is a concern 'cause once they get in high school, they really do push, push, push, push. Then we just can't – of all the people that I have to call 911 on, those are the kids that really scare me.*

The EMS as a safety net was utilized when students were without their inhaler for a variety of reasons, such as lost or forgotten inhalers. Some nurses utilized EMS for simple back up medication, as one nurse declared,

*I can't get a hold of this parent and there's no inhaler here, when am I gonna have to draw the line and call non-emergent EMTs to come give this kid an Albuterol treatment? Can't let her leave school like that on the bus.*

**Control.** Control of the self-carry decision was noted within the nurse and the parent. The researcher noted that the law was written granting to the parent the control of the self-carry decision. Per law, the only one required to sign for permission to self-carry

was the parent. The medical provider did not need to approve; merely the prescription for the inhaler was the requirement according to the law.

*Parental control.* Some nurses grasped this parental control issue during our interviews when asked, “How do you decide if children should self-carry inhalers?” One nurse’s response was to the point, “*I don’t, the parent does.*” When students and parents purposely kept the self-carry practice a secret, the nurses had no control or knowledge and the control was with the parent.

*School nurse control.* Despite the law giving control to the parents, many nurses had a perceived sense of control with the self-carry process. One nurse demonstrated this perceived sense of control, “*Dependent upon the age of your child, I really will make a decision on whether I sort of approve them to self-carry because I wanna witness them.*” Nurses felt a sense of control when inhalers were in the nurse’s office and did not feel in control when the students self-carried. Nurses wanted this control as it contributed to their feeling of providing care for these asthmatic students. Nurses expressed the need to control the documentation and competent administration of inhalers as well as preventing loss and sharing to achieve appropriate asthma management, student safety, and safely protect her nursing license. As expressed, “*I’m not gonna take, it’s not a liability I’m willing to take on for myself. I need to protect myself, as well.*” This comment demonstrated the legal risks some nurses felt, making decisions to decrease their liability by means necessary. One possible covert reason for this desired control that was expressed as, “*Just I don’t have the control and everybody likes to be in control.*” This suggests that some nurses might want the control for the sole reason of needing to feel in control subconsciously.

In the elementary setting, the nurses felt in control when the inhaler was in the nurses' office, under "lock and key." Overall, in high school, the nurses wanted the students to self-carry so this balance or "battle" for nurse control was not a common issue. Participants mentioned some lack of control indirectly when some expressed a lack of knowledge when students self-carried in secret.

*Control by others.* One district's policy, that included six participants, attempted to move some of the control to others, besides the parents. This was accomplished by requiring doctors, nurses, and principals to sign the self-carry consent forms. This consent incorporated language that apparently allowed the nurse some control within the process despite laws explicitly stating that the parent had control,

*If the school nurse does not concur with the health care provider's instructions after assessing the competencies of the student, the school nurse will contact the health care provider to attempt to agree upon a plan. In the event agreement is not reached, the parents may refer the case to the assigned district lead nurse for resolution. Permission for the self-administration of medication may be suspended if the student is unable to maintain the procedural safeguards established in the above agreement.*

The researcher noted this example as only a perceived control by the nurses via school district policy as the law did not require these additional signatures. This perceived control appeared inaccurate as parents could challenge the policy with the law. By instituting formal district policies and stating limitations on permission slips (e.g., the self-carry practice could be rescinded if the practice was abused or unsafe), the district and front-line nurses could possess a misplaced sense of control.

In summary, conditions influenced the participants' decisions regarding the self-carry issue. These conditions were discovered as accepting student characteristics, trust, knowledge deficits, supportive teachers, safety net, and control. Overall, the participants reported feeling uncomfortable when students self-carried, often causing nurses to discourage the practice. When participants supported the self-carry practice, there was still an element of discomfort by the nurses. These feelings ranged from being "a little uncomfortable" to "really uncomfortable."

**Actions/Interactions.** Contextual and conditional influences impacted the nurses' actions/interactions when deciding whether or not students should self-carry their inhaler in the school setting. The actions/interactions that nurses implemented with the self-carry process were summarized from the interviews with the in vivo code, "in my decision factor." This was also paraphrased as "my deciding factors" within the model in Table 2. This code expressed the multi-faceted process the nurses utilized in their decision-making. The decision-making process was complex and comprised many influences being "in" the decision-making, as compared to a recipe with ingredients being "in" for a good dish, or in this case, as a consequence. Also, important is the word "my," indicating that each participant was able to express her unique process; this was collectively analyzed. The word, factor, was used by a nurse to convey "one of the elements contributing to a particular result or situation" (dictionary.com, n.d.), describing the nurses' decision-making process as multifaceted. Various categories that were discovered and described as an action nurses took in this decision-making process included the nursing philosophy, utilizing one's internal policy, guiding praxis, and assessing students.

**Nursing philosophy.** Application of the participants' nursing philosophy regarding the self-carry practice was part of the decision-making process utilized by the nurses. The philosophy or belief about whether students should self-carry were both barriers and facilitators of the self-carry practice. Participants in elementary schools had the belief that students at this age should not self-carry, *"I'm pretty proactive with asthma, and I keep their inhalers."* Nine of the 13 elementary school nurse participants had zero students with asthma self-carry. Three other elementary schools had 3% to 20% of their asthmatic students self-carry. One outlier had about 50% self-carry (Table 3). Elementary school nurse participants did not broach the self-carry option with parents and were primarily clandestine unless prompted by the parent. Elementary school nurses would often persuade parents out of self-carrying if the parent approached the nurse with that request. Nurses appeared to be a barrier to the self-carry practice at the elementary level as one nurse declared, *"Well, for the most part, in elementary, I'm not that pro-self-carry to begin with."*

At the high school level, all seven of the participants believed the students should self-carry inhalers. The nurses became facilitators and supporters of the self-carry practice despite perceived risks. One high school nurse preferred the inhaler be kept in the nurse's office for assessment purposes, but opted for the self-carry practice pragmatically because of the large campus size. This nurse presented the high school participant philosophy discernably,

*My policy is if you have asthma then you need to have an inhaler and you need to have it on your person, period. They carry their cell phones, they ought to be able to carry their inhaler.*

Contrasted with elementary school nurses, high school nurses brought up the self-carry issue with parents and students when inhalers were needed. Some participants reviewed the health history and, if asthma was noted, they automatically sent home permission slips to self-carry. The high school nurses in this study supported and highly encouraged a 100% self-carrying practice (Table 3). Three high schools did not track the number of asthmatic students because of the 100% self-carrying practice.

Table 3

*Student Population and Self-Carry Statistics*

| ID / school type | Student<br>population | Asthmatic<br>students who<br>self-carry<br>(#) | Asthmatic<br>students who<br>self-carry<br>(%) | Students with<br>asthma<br>(#) |
|------------------|-----------------------|--|--|--------------------------------|
| 1/Elementary     | 740                   | 4  | 3%   | 123<br>(1:6 ratio)             |
| 2/Elementary     | 800                   | 0  | 0  | 10                             |
| 3/Elementary     | 611                   | 20-25  | 50%  | 40-50                          |
| 4/Elementary     | 700                   | 0  | 0  | 15                             |
| 5/Elementary     | 765                   | 0  | 0  | 50                             |
| 6/Elementary     | 650                   | 0  | 0  | 123                            |
| 7/Elementary     | 760                   | 0  | 0  | 82                             |
| 8/Elementary     | 600                   | 2  | 18%  | 11                             |
| 9/Elementary     | 500                   | 0  | 0  | 13                             |
| 10/Elementary    | 524                   | 0  | 0  | 64                             |
| 11/Elementary    | 750                   | 0  | 0  | 112                            |
| 12/Elementary    | 700                   | 0  | 0  | 40+                            |
| 13/Elementary    | 740                   | 5  | 20%  | 25                             |
| 14/High School   | 2600                  | 5  | 50%  | 10<br>documented               |
| 15/High School   | 1600                  | 11   | 5%   | 200                            |
| 16/High School   | 1800                  | *  | *  | 100                            |
| 17/High School   | 2600                  | *  | *  | 208                            |
| 18/High School   | 1409                  | 198  | 99%  | 200+                           |
| 19/High School   | 1475                  | 40   | 13%  | 300                            |
| 20/High School   | 1700                  | *  | *  | *                              |

*Note.* \*Unknown numbers of students who self-carried; but 100% self-carry practice.



***Utilizing one's "internal policy."*** Participants followed their intuition and experience in favoring or opposing the self-carrying practice; often without regard to the law or policy. Their "internal policy" drove a majority of decisions made by the nurses. Following one's internal policy guided participants to follow and break policy and the laws.

A few participants had an internal policy to follow the law, "*if I can't win that then the child is going to self-carry because I am not going to break the law.*" Many participants did not know the specifics of the law but were aware that legislation supported the self-carry practice. Often, the internal policy matched the law or school policy without realization,

*I shouldn't say this out loud. I don't really know what our school policy is. I know what my policy is and I want them to be able to breathe. And if an inhaler will help them breathe then we're going to carry it.*

Some participants broke the policy and law and said that the students' overall health superseded any policy. One clearly articulated this stance, "*My internal policy has always been I'd prefer you have the inhaler than the consent on file.*" Another example of a participant breaking a law, not specifically the self-carry law, but one affecting the self-carry student was, "*Again, if push comes to shove, I have an extra inhaler that I'm not above saying there's an inhaler in there, why don't you get that out and hand it to the student.*" Participants considered the self-carrying practice as a privilege instead of a right; one that could be rescinded if needed.

***Guiding praxis.*** The participants related many influences from their nursing practice causing them to apply their praxis to the decision-making process. All nurses

interviewed shared experiences of students who had lost, forgotten, overused, over-dosed, and shared inhalers; as a consequence, many of them wanted to keep inhalers locked up in the nurse's office so the student could be safe and have their medication when needed. The concept of praxis was noted either directly or indirectly within all interviews as the participants shared their experiences. Some participants clearly identified the value of that experience; in other cases, the researcher identified their use of praxis as a guide. One nurse clearly articulated the value of her experience, *"I think what I bring is the fact that I am a nurse, and they are a child. That's different. Even if you're a genius, there's still experience in the field versus . . ."* (nurse didn't finish comment).

A few participants relayed experiences with students who self-carried inhalers for asthma maintenance and not for rescue breathing. This was mentioned as something that made the self-carry practice difficult for participants. One nurse expressed,

*And like one of my junior high kids, and he's had asthma for years, and he came in one day and the inhaler he had at school was Flovent. And I'm like, why are you using it, 'cause I feel like I need it and I said no and we went through the whole thing.*

Phrases such as *"I'll never forget him"* demonstrated that some of these experiences and children were embedded in the nurse's memory and practice. Participants became cautious and proactive in decreasing risks of asthma exacerbations by either limiting or encouraging self-carrying, depending on their praxis. Past experiences with parents impacted the participants' decisions regarding the self-carry practice. Experiences with parents caused many nurses to believe that parents just did not understand the gravity of the disease and did not manage asthma appropriately. One experience stood out as an

exemplar; a participant who was the nurse of a second grader that died because of his asthma,

*Being a little more proactive than I had been because I think it could have been prevented. I think it was needless. And that, I know, will stay with me forever . . . I do know that the mom would just increase how often she would give him his albuterol and even doubling his using the inhaler with his nebulizer.*

Praxis was mentioned as an influence to support the self-carry practice, although praxis was mentioned much less as a reason to support the self-carry practice. One nurse shared her experience,

*I really, actually, encourage them to carry their own because our fields are way out, and I, on one occasion, had to hand an inhaler through the fence, after I ran it out there, and choose not to do that.*

***Assessing students' ability to self-carry.*** Assessing the student's ability to self-carry and making a decision based on that assessment was a factor in the self-carry decision-making process. This evaluation was done within the nurse's normal assessment process or mandated as district policy. At the elementary level, the assessment was usually done after the parent requested the student self-carry. From that assessment, the nurse would typically educate to address any identified knowledge deficits. One nurse explained,

*If you're going to have somebody carry – self-carry an inhaler – you have to go through a process . . . I have to assess that they know what they're doing, they know what it's for, they know when to take it and how to take in, that the technique is correct.*

Some participants added that they assessed if students were aware of their triggers and what to do if no relief was obtained from the inhaler.

At the high school level, the pre-assessment occurred, but not as often as at the elementary school level. The assessment usually ensued if the self-carry student presented to the nurse's office with an asthma exacerbation. As one nurse explained, "*I just note it (asthma) as a condition. If that student shows up and has wheezing, generally then, I will initiate.*" Most permission slips provided some statement that the parents and doctor signed, stating the student's ability to self-carry,

*\_\_\_\_\_ permitted to carry the inhaler on his/her person or to keep inhaler in his/her classroom, backpack, locker or off campus school activity, as we consider him/her responsible. He/she has been instructed in and understands the purpose and appropriate method and frequency of use of his/her inhaler.*

This documentation put the assessment responsibility on the doctor and parent and was the norm for this type of permission slip. One kindergarten-through-twelfth grade district had a comprehensive permission slip in terms of student assessment; six of the participants within the study were from this district. This permission slip incorporated eight criteria where participants had to assess a student to self-carry an inhaler. Two examples of the eight criteria included: "*Student is able to identify/associate specific symptoms occurrence and need for medication administration*" and "*Student is able to state side effects/adverse reactions to medication.*" With this permission slip, the nurse assessed, taught, and reassessed that all criteria were met and checked off. In a subsequent step, two statements were needed to be checked by the nurse: "*Based on assessment: the student is a candidate for a self-medication program with supervision*"

and “*The student has successfully completed self-medication training and has demonstrated appropriate self-administration.*”

In summary, the actions participants included in their decision-making process included their nursing philosophy, utilizing one’s internal policy, guiding praxis, and assessing students’ ability to self-carry. These issues had dimensions that caused the nurse to support or discourage the self-carry practice. The nurses expressed varied and personal influences, stating that the process was “*in my decision factor.*”

**Consequences.** Based on the context, conditions, and actions/interactions implemented by the participants, consequences were inevitable. These consequences included either supporting or discouraging the self-carry process. The in vivo code best describing this component of the nurses’ decision-making process was “you need to do what you need to do.” The nurses’ dilemma regarding the self-carry issue had been captured in terms of the nurses’ perspectives. From these varying perspectives, decision-making had been influenced. These consequences were the decisions that the participants made taking into account the powerful influences they experienced in the context, condition, and interactions. This category of consequences included manipulating the situation, micromanaging, letting it go, and fostering independence and empowerment.

***Manipulating the situation.*** One main consequence was when nurses manipulated the situation. This manipulation included keeping the self-carry option a secret, talking parents out of the self-carry option, and using the paperwork requirement to the nurse’s advantage.

***Secrets.*** Nurses kept the self-carry option a secret from students and parents when parents were unaware of the law that gave their student the right to self-carry. Many

nurses would not broach the self-carry option unless the parent asked. This allowed the nurse to maintain control of the asthma inhaler, as one nurse declared, *“I don’t mention it because I have more control with it here than if it’s floating around out there.”* With participants in the elementary setting, 12 out of 13 nurses did not make the parent aware of the self-carry option. One nurse explained this by stating, *“I really don’t make that option public. I mean if they want, I will tell the truth. But it’s not something I publish.”* Another nurse echoed the same by stating, *“no I do not. I do not open that up.”* High school nurses did not keep the self-carry option a secret. All seven high school nurses made the parent or student aware of the self-carry option.

*Talking parents out of self-carrying.* While 12 of the 13 participants kept the self-carry option a secret, all 13 elementary school nurses would try to talk the parents out of self-carrying if the parents approached them with a request or when the parent was aware of the option. The participants were more successful than not at talking parents out of having their children self-carry. The nurses stressed the negative outcomes to self-carrying. Participants often explained the risks of self-carrying and the benefits of keeping the inhaler in the nurse’s office. One nurse explained how she explained this to the parents, *“So if I can keep them knowledgeable, if I can educate them . . . They’re like well, yeah, you’re the one with the stethoscope. You’re the one listening.”* The researcher noted that participants did not explain to the parents the benefits of self-carry; only the risks were shared. Participants were more likely to acknowledge the benefits of self-carry, such as immediate access, less missed class time, and independence, but did not mention these to parents when attempting to convince them to opt out of the self-carry option. One nurse relayed,

*I don't necessarily bring it up, the parents ask . . . and I tell them that we keep it in a safe place so when they need it, it's here, not lost, or left somewhere when they need the medication; and we don't have it to offer them because it's not here. So, that's what we say."*

Parental control of the self-carry practice was expressed by one nurse as, "*the parent comes in and tells me, the child's gonna carry it,*" instigating the nurse to convince the parents otherwise. The nurse would feel embattled with the parent and trying to direct the parent's decision,

*I have to take the parent's prerogative into consideration when I'm making my decision, and if they're very adamant about it and they are willing to provide the necessary documentation, it's almost like you kinda almost have to let them. I do discuss it with them, though, and I try to tell them look, I have a different scenario.*

Another strategy utilized in talking parents out of the self-carry option was to share information regarding the legal liability the parent had with other students on campus. This often caused the parent to back down from the desire to have the child self-carry. As one participant shared,

*Parents also have to understand that there is liability if another student gets ahold of their medication. Obviously, the school is liable, and the parents have to sign off that they're okay with partial responsibility, I guess . . . We sit down, we have a sit down meeting with them, to see what their – we discuss what's going on. Most of the time, I have not had a problem with them saying, "You know what,*

*I don't want that responsibility. I trust my kid, but it's the other kids." They're fine with the student coming down to my office.*

Talking the parent out of the self-carry practice was done utilizing different perspectives, as shown by various comments nurses utilized when a parent requested that their child self-carry.

*Using the paperwork requirement.* Paperwork requirements to self-carry ranged from a permission slip, a one-half sheet of paper that the parent had to sign, to an extensive, two-sided permission slip requiring parent, student, physician, nurse, and principal signatures. According to the law, only the parent's signature is needed. Some participants at the elementary school level used the paperwork requirement as a means to get a parent to rethink and/or withdraw their request. Two comments by participants explained how nurses used paperwork in their favor,

*I like them to be a little bit older. Like I said, I've only had one parent approach me on it, and the mere mention of having to take it to the doctor and have a doctor's signature, well that pretty much ended that one real fast.*

Another commented,

*It has to be signed off by the student, the parents, the teachers, the principal, and me. That it takes – it takes a bit of doing to get the paperwork all in order for self-carrying . . . if it's something that really shouldn't be happening it can be a barrier. It's kind of a tool.*

The paperwork requirement could be a barrier both in elementary and at the high school level. In elementary, some participants knew this and would mention the paperwork, knowing that parents would sometimes back down. At the high school level, paperwork



was a barrier but, in this setting, nurses would break policy and manipulate the situation so students could self-carry without the doctor signature. One nurse changed the district permission slip and hand wrote “not required” next to the section asking for the physician’s signature. The physician’s signature was required by the district, next to a statement that stated the student has been instructed on how to use the medication as well as having the doctor’s permission to self-carry. This participant then copied the informally revised paperwork with the hand written words “not required” for use with all self-carry students. Another nurse stated it in this way,

*My internal policy has always been I’d prefer you have the inhaler than the consent on file, so there are probably more (who self-carry) than I have consents on file.”*

Despite the law and most policies requiring annual parent permission to self-carry, one high school nurse obtained parent permission that allowed students to self-carry in the freshman year and used this consent for all 4 years the student was in school. She said, “Theoretically, I should get a new one each school year. You can try, but if I get one freshman year, I’m gonna assume they’re okay with the rest.”

The manipulation, in terms of adjusting the requirements of the paperwork or using the paperwork to the nurses’ advantage, was used as a means to assist the nurse in getting what she felt was best in this situation. This supported her judgment that the student should not self-carry in elementary school or should self-carry in high school.

***Micromanaging.*** Effective asthma management was noted when the nurse managed the inhalers. This was categorized as micromanaging from the in vivo code, micromanager. Less than optimal asthma management was a consequence of self-

carrying. Asthma management was perceived as effective by the participants when they were administering the inhalers in the nurses' office, as in most elementary schools. Care plans, management of paperwork, assessments, documentation, education, minimization of lost and forgotten inhalers, supervision of medication administration, and appropriate doctor referrals were the roles the nurses' performed when the student did not self-carry but instead kept the inhaler in the nurse's office. These roles were completed to some extent with each nurse and it was perceived as better asthma management than if the student self-carried. One nurse expressed why she wanted to manage the inhaler and asthma that resonated with many of the elementary school nurses "*My whole thing is to try to get him balanced where he doesn't have to use it all the time.*" High school nurses managed inhalers less than elementary school nurses did. One high school nurse expressed a theme noted in all of the high school nurses, "*I'm not a micromanager.*" With this said, elementary school nurses could be seen on the other end of the spectrum as micromanagers.

When students self-carried their inhaler, asthma management was perceived by the participants as less than optimal as they did not micromanage the situation. When students self-carried in the elementary setting, a few nurses wanted the student to come to the nurse after inhaler use or have the teacher or student call to notify the nurse of the inhaler use. This attempt to micromanage the situation was explained as, "*If they have to use it, making sure that they have to come let me know that they used it so that, you know, I know that they're having issues in the classroom.*" In another interview,

*The two that I know that, that carry here, you know, making sure that they come in and taking a listen to them, checking their, making sure that they've got good air movement and that they're responding to the inhaler use.*

One participant reported that, with students, it “*will still be possible to have a mistake*” no matter how responsible or mature they seem, just because they are children. Issues of lost inhalers, no back up inhaler, overuse, and lack of education were issues that caused students to ineffectively manage their asthma. This contributed to the nurses’ desire to manage the inhalers and students’ asthma in the nurse’s office. Calls to activate the EMS increased when student’s self-carried and managed their own asthma because of the lack of a backup inhaler and waiting too long to seek care with the nurse. A specific example of less than optimal asthma management was expressed by one participant with this statement,

*But the con is not knowing when a kid is actually struggling or having serious – especially if they were self-administering on a daily basis when that should have been a call to the parents to say this kids need to get in, probably needs a steroid burst, probably needs more than a rescue inhaler every day. It would just not – it would not afford me to be able to do the educating that I need to do as the school nurse ‘cause that’s a big part of the job is making sure that kids understand why they’re having to do what they have to do.”*

***Fostering independence and empowerment.*** The resounding similarity between elementary and high school nurse participants’ perceptions was that self-carrying fostered independence and empowerment for self-care. This theme was easily found in almost every interview as a benefit to the self-carry practice. Not all elementary school nurses

supported or promoted self-carrying, but they did mention that independence was an outcome to self-carrying practice. An example of this independence was stated as,

*They are taking responsibility for themselves and their own health. I like that because at this stage of the game they need to start learning independence and taking care of their own medical issues. It's good for them to ask questions and find out from their parents anything. If they were on medication they need to know what the medication is, what it's for, what the side effects are. And the more we can encourage them to do that at this age then the better off they will be when they get out on their own.*

Empowerment to care for themselves was evident as an important consequence by the participants as it was stated “*but if they take a little bit more ownership of it and they know what they're looking for, they know what they're doing. I want them to take that and own that.*” The self-carry process was believed to be a step towards “*easing*” them into adult situations regarding asthma management. Despite the lack of self-carry promotion by elementary school nurses, they reported that self-carry assisted the students with self-care for high school and the high school nurses reported self-carrying as a necessary step for teaching students how to be responsible and independent for “*the real world*” when they are adults. When participants worked towards increasing a students’ independence and empowerment as a goal, their involvement and management of the student’s asthma decreased. This mentality was prevalent primarily in the high school population as expressed by one participant,

*“I’m not a micromanager when it comes to the medication because, again, I’m real world, and this is love and logic. I will not always be around. You need to know your body, know when and what you need to do.”*

Another finding that was indirectly tied to empowerment was increased time in the classroom and playground when students self-carried. Many students would not want to come to the nurse’s office during class time and especially recess time. The self-carry process empowered them to continue to function in their role of student in the classroom and socially on the playground.

**Letting it go.** Another consequence of the influences on the participants’ decisions surrounding the self-carry issue was the decision by the nurse to “let it go.” Some of the participants knew they had to concede because of the laws and policy giving decision-making or control to the parent. Instead of manipulating the situation, letting it go was another decision the nurses made. One nurse expressed this consequence, *“Well, I have to let it go. I have let it go. I have – I don’t feel – I can do what I can do. The law says that they can carry it and I deal with whatever happens after that.”* Fourteen of the participants stated that the decision that allowed the self-carry practice was somebody other than the nurses’. Six nurses expressed ideas that demonstrated the category of letting it go. One participant expressed the attempt to talk a parent out of the self-carry practice as the first decision. When that did not work, she had to let it go,

*I mean if the parent is adamant that they carry it then I need to have that conversation about how it’s never going to be withheld and its always going to be there, right, right there. The parent, the teacher just has to pick up the phone if*

*the child thinks they can't get here. And if, if I can't win that then the child is going to self-carry because I am not going to break the law."*

Another participant expressed letting go was something that was difficult and had to be done, *"I truly don't know what's going on out there. I do like, these are my kids, so I do care what goes on, but sometimes, you have to let that control go."*

This participant also knew they had to concede, *"Well, a lot of it isn't my decision-making, it's what the parent insists, and if a doctor signs permission, It's really not much else I can do."*

In summary, the consequences were the result of contextual and conditional influences the participants encountered as they negotiated a proper course of action with the self-carry process. These consequences were expressed overall with the in vivo code, "you need to do what you need to do." What the participants felt was necessary was to manipulate the issue, micromanage, foster independence and empowerment, or let it go. All the nurses manipulated the issue to some extent. Some nurses micromanaged the asthma medication situation, discouraging the self-carry practice. Other nurses fostered independence and empowerment by supporting the self-carry practice. Lastly, a few nurses let it go.

### **Substantive Theory**

A substantive theory was developed from the findings using grounded theory. *"Balancing decisions about the self-carry practice: Powerful influences"* was uncovered as the central psychosocial process that explained the school nurses' decision-making about when and how students should self-carry inhalers in the school setting. This model represented the salient perspectives of the school nurses, the many influences that

impacted their decisions, and the influence the nurse had on the issue of self-carrying. A conceptual map of this model, included in Figure 2, allowed for a visual description of the model.

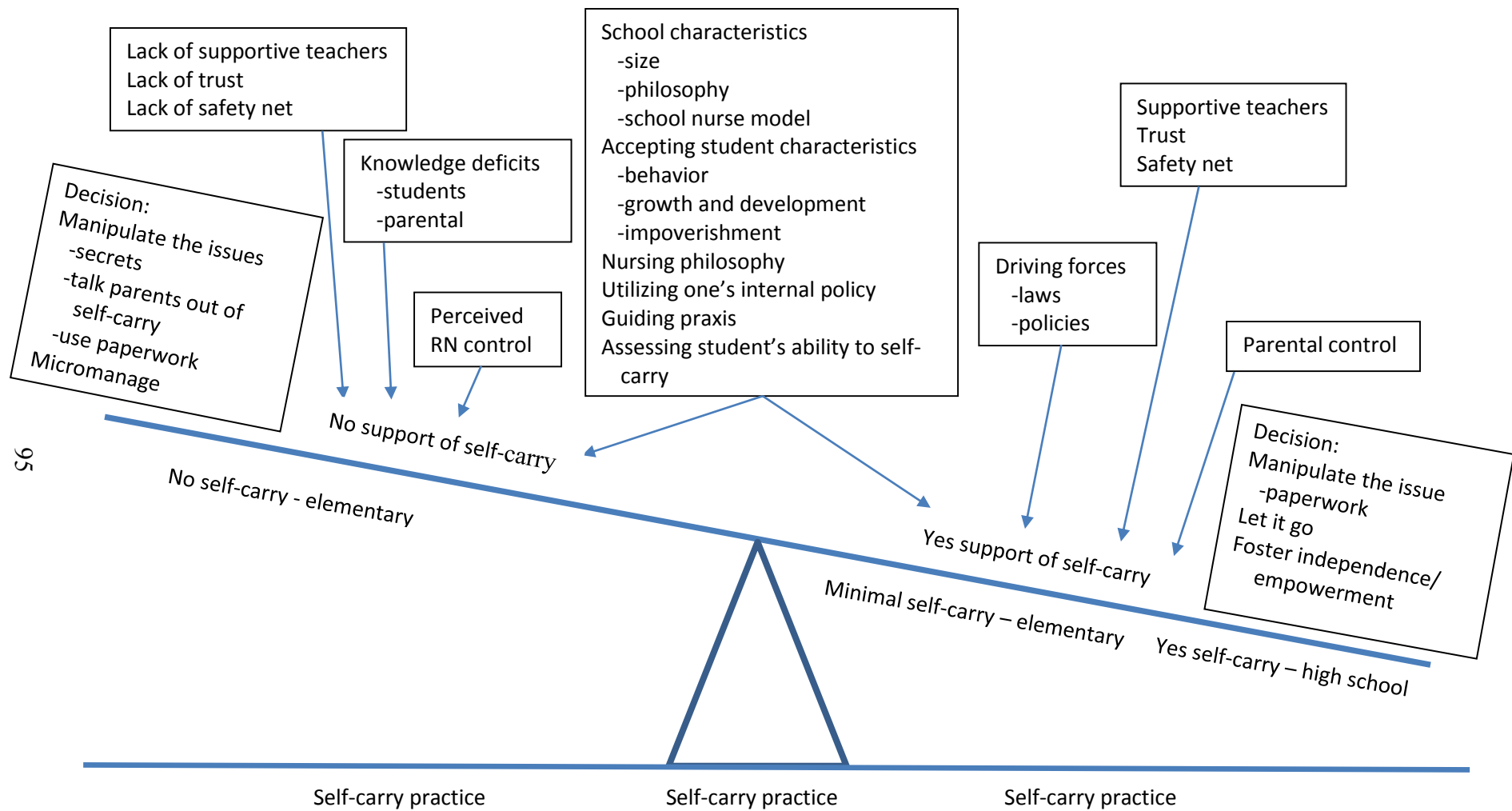


Figure 2. Balancing decisions about the self-carry practice: Powerful influences



After reviewing all the themes and categories discovered in the stories and experiences of the school nurse participants, it was discovered that many factors had powerful influences on their decision-making process. This model included the concept of a teeter totter demonstrating the weight that influences had on the nurses' decision-making processes. They balanced those influences to decide how they would support, or not support, the self-carry process amongst their students.

At the base of this model is the linear self-carry practice, portrayed as the ground, the base of the issue. The weight of the powerful influences was such that either end of the teeter totter was weighted down toward the ground; the influences that impacted the nurse's support of the self-carry practice, or the weight, was of varying magnitude. The further the left end of the teeter totter was from the ground, the more likely that the nurse does not support the self-carry practice. The closer the right end of the teeter totter was to the ground, the more likely that the nurse supported the self-carry practice.

The powerful influences from the context, conditions, and actions had consequences to the psychosocial decision-making process to support or discourage the self-carry practice. At the center of the influences were the school characteristics, accepting student behavior, nursing philosophy, utilizing one's internal policy, guiding praxis, and assessing students' ability to self-carry. School characteristics were further subcategorized and included the school size, philosophy, school nurse model, and standing orders. Accepting student characteristics had more specific subcategories such as behavior, development, and impoverishment. From these six categories, the influences weighted on both ends of the teeter totter. In other words, these categories had influences that both helped the nurse to decide in favor of self-carry and not to favor self-carry. The

model in Figure 2 demonstrated that by showing two arrows from these categories pointing to each side of the teeter totter; one side was supportive (i.e., yes support self-carry) and the other side was not being supportive (i.e., no support self-carry). These categories provided information the nurse had to consider and balance within her decision-making process to support or discourage the self-carry practice. Many nurses tipped the information towards supporting the self-carry practice while others weighed the information to mean they should not support the practice.

In addition to the above categories, the yes-support side of the teeter totter included powerful influences that weighed heavily on allowing the students to self-carry. Laws and policies were heavily weighted on the support-self-carry side only, hence the arrows pointed only towards this end of the decision. Supportive teachers, trust, and safety net were also part of the participants' decision-making process to support self-carry. Lastly, parental control influenced the decision to support the self-carry process.

From all of these influences, the participants' decision to manipulate the issue with the required self-carry paperwork enabled the student to self-carry by not requiring the provider's signature. In some situations, the influences swayed the participant to decide to let it go, allowing the student to self-carry despite discomfort with the idea. The last consequence noted, when the nurse balanced all these influences, was to foster independence and empowerment within the students and support the self-carry process. The overall consequences were that all high school students self-carried and a minimal number of elementary students self-carried.

On the no-support side of the teeter totter, there were influences in addition to the original six central categories. These influences weighted the left side, furthest from the

self-carry ground. These additional influences were lack of supportive teachers, lack of trust, and lack of a safety net. These issues created downward pressure on the side where participants discouraged self-carrying. Knowledge deficits of the students and parents also weighted this side and caused the nurse to decide against the self-carry practice. Lastly, the perceived school nurse control influenced the nurse to deny the self-carry practice. In the model, these influences point only towards the no-support side.

From these influences on the no-support side, nurses decided to manipulate the issue so students would not self-carry. This was done by keeping secrets about the law and policies, talking parents out of the self-carry practice, and using the required paperwork to discourage the self-carry practice. Another consequence was the micromanaging of the students. This micromanaging was in the form of the nurse controlling various aspects of the inhaler administration and asthma management that did not include self-carry. The ultimate endpoint and decision was that elementary school nurses did not allow or support self-carry when nurses balanced these powerful influences.

Within this model, the more the participant micromanaged, the less the participant provided support for independence and empowerment. Conversely, the more the participant provided support for independence and empowerment, the less the participant micromanaged. This was expressed on the model by being on different ends of the teeter totter; as one end rose, the other fell. This was true for other influences within this model (e.g., manipulation). The less the nurse manipulated in terms of keeping secrets and talking parents out of self-carrying, the more students self-carried and contrarily, the more secrets and discouragement of self-carry, the less students self-carried.

## CHAPTER V

### DISCUSSION

#### Meaning of the Findings

Findings of this study illuminated meaning for school nurses caring for students who self-carry or request to self-carry rescue inhalers in the school setting. The findings formulated the components of the substantive theory, *Balancing decisions about the self-carry practice: Powerful influences*. These findings addressed the research questions and aims proposed within this study that culminated in the substantive theory. The findings are discussed in terms of factors that impacted the nurses' decision-making (e.g., context, conditions, actions/interactions) and the consequences of the nurses' decision in terms of the care provided. Another finding realized throughout this study was the limited research regarding students self-carrying inhalers and the nurses' decision-making regarding the self-carry issue. The meaning of these findings are explored in detail, starting with limited research.

**Limited research.** There were no studies that specifically addressed school nurses' perceptions or decision-making processes with students who self-carried inhalers in schools. Also missing were studies that included educational interventions or any type of interventions to improve the self-carry practice in the school setting, such as measured outcomes (e.g., attendance, grades, exacerbations, visits to nurse's office, medical referrals). As noted in Chapter II, a few studies addressed the issue in terms of the number of students who self-carried, self-carry legislation, self-carry policies, and other self-carry components as part of broader studies, but not the main focus of the study. There was one inhaler self-carry pilot study in the literature that addressed a tool to measure if students were ready to safely self-carry inhalers.

In light of limited research regarding the self-carry of inhalers, literature related to the self-carry of EAI was identified and had some similarities with the self-carry inhaler issue as both medications impact breathing and had the potential to relieve respiratory distress. These epinephrine research articles were used to validate findings with the inhaler self-carry issue when warranted.

One publication located after completion of the literature review was from the ALA (2014b), an issue brief entitled *Improving access to asthma medication in schools*. This issue brief combined research findings from external studies, expert opinions, and the ALA's own assessment tool to survey school and district personnel about appropriate inhaler access policies and practices in schools. The document and research focused on the self-carry practice as the means for improving access to inhalers. Thirty-eight states and over 1,500 participants returned the ALA's assessment tool entitled *Asthma in Schools Assessment*. Eighty-eight percent of respondents were school nurses. Findings were categorized as *barriers to access* and *recommendations to support self-carry*. The ALA did not describe this as a research study, but stated that they "distributed an assessment tool" (ALA, 2014b, p. 3). A search of databases and the ALA's website was performed to locate the specific primary study utilizing the assessment tool from the ALA but could not be found.

The current findings of this dissertation study were validated by literature from studies regarding general asthma, self-carry of EAI, self-carry of inhalers, and other pertinent topics. Although the research questions were not intervention based, expert opinion from committees or individual authorities were also used as evidence in

validating the findings of the research questions (Melnik & Fineout-Overholt, 2015).

This was necessary because of limited research within this topic.

**Factors that influenced decision-making.** The factors that influenced the school nurses' decisions regarding self-carrying were ones they had to balance in providing appropriate nursing care to students who desired or needed to self-carry. These factors included the context, conditions, and action or interactions presented by the self-carry issue. Within the theory presented above, these factors weighed on the nurses' decision-making process on the teeter totter to either support or not support the self-carry practice.

**Laws.** Legislation or laws addressing the self-carry issue in these schools in Arizona did not include school nurse involvement. The only legislative requirement was a prescription and parental permission. The school has been released from liability for their good faith implementation of this law. This Arizona law followed the recommendation from the federal government's Asthmatic School Children's Treatment and Health Management Act of 2004 that encouraged states to enact laws allowing students to self-carry inhalers and epinephrine (Public Law 108-377, 2004, Center for Health and Health Care in Schools, 2004). Arizona also was consistent with the other 49 states that passed legislation allowing students to self-carry in schools (NHLBI, 2014). Only 25% of the nurses in this study were aware that a state self-carry law existed in Arizona and none were able to express the specifics of the law; therefore, 75% of these nurses were not informed about current legislation. This level of awareness was a substantially lower statistic than what was found in the literature; 90% of nurses in the Allen et al. (2012) study knew that their states had passed laws allowing students the right to self-carry their rescue inhaler. When probed about laws, no nurses in this

dissertation study mentioned federal legislation affecting the self-carry practice (e.g., Asthmatic School Children's Treatment and Health Management Act of 2004; Individuals with Disabilities Education Act, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act). This finding demonstrated the need for school nurse education regarding laws impacting school health practices.

***Policies.*** Inhaler self-carry district level policies emulated the Arizona self-carry laws as all 19 public school districts linked their district website to the Arizona self-carry law. The lone Catholic school was without that linkage.

Eleven of the participants' school districts had specific self-carry policies implementing the state law and were easily accessible. Of the schools represented by the 20 participants, 10 elementary schools and one high school had a self-carry policy in the student handbook. The remaining nine participants' school districts had self-carry policies or permission slips that were not incorporated into the student handbook. This allowed for the possibility that parents were unaware that self-carry was an option, as the district website's self-carry policy was difficult to locate. Additionally, when parents read the medication section of the student handbook in these nine schools, they would not have seen information allowing for a self-carry option. The ALA stated that "many schools do not properly communicate the procedures or paperwork required to allow a student to self-carry their medications. A school must have a clearly written policy that is properly shared with parents or guardians of a student with asthma" (ALA, n.d.a, para. 10). Two other studies found that parents did not know if their child could self-carry inhalers or EIAs in the schools setting (Egginton et al., 2013 & Fragapane et al., 2010). This dissertation study finding was consistent with the ALA and these studies.

State legislation allowing for local control in implementing the law through district and school policy could add intended or unintended barriers to the self-carry practice. In states with local control, more restrictions to self-carry were realized suggesting that the self-carry practice could see similar restrictions (ALA, 2014b). This was evident in this dissertation study as some school district policies mandated additional signatures not present in the law (e.g., doctor, student, nurse, principal) in addition to the parents' signatures.

Some states had districts that locally implemented the law but stated that the self-carry permission could be rescinded; students would not be allowed to self-carry if the privilege was abused or not handled in a safe manner. Seven states allowed this dangerous provision within their law and permitted the restriction of a student's access to his or her breathing medication for misusing or behaving irresponsibly (ALA, 2014b), counter to the belief that limiting immediate access should never be the consequence for bad behavior. Few state laws (e.g., Mississippi) clarified that taking away a student's ability to self-carry could not be used for punishment (ALA, 2014b). Arizona's law was silent on the implications for bad or unsafe behavior leaving interpretation to local decision-making with district level policy. Notably, some Arizona district's self-carry permission slips could be rescinded for bad behavior related to the self-carry practice. Nurses could advocate for updating the law to forbid the practice of withholding breathing medication as a disciplinary consequence or could inform policies on disciplinary actions that do not include withholding self-carry access to rescue breathing inhalers.



In respect to policy, eight elementary school nurses were familiar and five were not familiar with their school's policy. In high school, three nurses did not follow permission slip requirements. According to the ALA's (2014b) issue brief, it was found that over 100 respondents did not know school level policies. There was also confusion regarding the application of policies (ALA, 2014b & Egginton et al., 2013). According to the brief, education of school personnel must occur to familiarize staff with the laws and policies for the safe implementation of the self-carry practice. This ALA and Egginton's study validated the findings of the dissertation study as to the educational needs of school nurses.

These findings suggest meaningful changes need to occur. First, lobbying should include state-level legislative changes that are more specific and alleviate local control barriers to benefit and support self-carry practice. Also, school nurse and parental education on the self-carry policies is recommended. Lastly, incorporating policy in all handbooks or another means of parental notification should be done so that parents are aware of the self-carry option.

**Guidelines.** Asthma guidelines by agencies were not mentioned by any of the participants. When asked what guided their practice in deciding on the self-carry issue, laws, policies, and internal judgment were mentioned. Information or resources from the NHLBI, National Association of School Nurses, ALA, or any other leading authority on asthma management in schools were never mentioned. This conflicted with a study that found that 28% of nurses were familiar with NHLBI asthma guidelines (Keysser et al., 2006). Asthma management education might be beneficial for the school nurses in terms of experts' recommended guidelines and resources.

***School characteristics.*** Various school characteristics influenced the nurses' self-carry decision-making. These included the school's philosophy, school size, model of school nursing, and availability of standing orders.

***School philosophy.*** The prioritization of mandatory standardized academic testing in schools meant no time was available for asthma management education; without education, it was difficult for nurses to support the self-carry practice because of the potential for poor outcomes. The educational standards at school required critical class time. Meeting asthma education needs was not supported in the schools. If asthma education did occur, it would need to be delivered after school or during lunch-time. Six nurses mentioned that the self-carry practice increased class time, yet those nurses were against self-carrying.

Expert opinion about asthma management suggested that time and space were limited in the school setting and asthma education, if it occurred, was often held after school or during lunch break (Wheeler, Merkle, Gerald, & Taggart, 2006). This validated the findings in this dissertation study since the nurses felt constrained about offering education so as not to divert students from their academic content. Asthma programs could be beneficial to the self-carry practice if attempted and delivered during the times coordinated with students' academic needs (e.g., after school, during lunch).

A systematic review on the effects of school-aged children's asthma self-management education revealed that these programs substantially increased attendance rates for students with asthma. Self-carry was not specifically mentioned but could be a component of the self-management (Ahmad & Grimes, 2011). With the dissertation study findings that schools were concerned about test scores and meeting academic standards,

this information could support the need for asthma self-management education, including self-carry content, as a means to increase attendance and positively influence test scores and attendance standards.

*School size.* Fifty percent of the nurses in this study believed that small campuses made self-carry unnecessary as inhaler access could be quicker and easier if the nurse stored the inhaler in the nurses' office rather than the student's backpack. Twenty-five percent of the nurses believed that a large campus warranted the need to self-carry. Regarding student population size, elementary schools with populations of 500 to 800 students had nurses who preferred to keep inhalers in the nurse's offices as inhalers could be conveniently managed by the nurse. Eight elementary nurses said that the risk of other children accessing the asthmatic students' medication made the self-carry option difficult to implement. This was validated by an EAI study that found when students self-carried, others toyed with or stole their EAIs (Macadam et al., 2012). On the other hand, three out of seven high school nurses (40%) said that a large student population of 1,700 to 2,400 warranted the need for students to self-carry as the nurse could not manage all the care.

One research study that addressed asthma management, not specifically the self-carry issue, mentioned a high volume of students as a barrier to asthma management in schools (Svavarsdottir et al., 2012). This study validated the findings of this dissertation study in that a large student population could impact the nurse's ability to manage, support, and educate the self-carry students when on the school campus.

In another study that addressed asthma medication access in schools, researchers found that high student-to-nurse ratios were a "limiting factor in students' ability to self-carry" (ALA, 2014b, p. 5). Student loads exceeded the recommendation by the National

Association of School Nurses of 750 students-to-one school nurse and occurred in over 50% of the schools surveyed (ALA, 2014b). Expert opinion on implementing policy to improve outcomes for students with asthma reported that a student load of one nurse-to-750 or better is recommended to address inadequate health services and improve upon them (Lynn, Oppenheimer, & Zimmer, 2014). As the nurses in the dissertation reported, a large student population was a factor in allowing the students to self-carry and did not limit students in self-carrying as the ALA's study suggested. Perhaps the limiting factor was in terms of not properly assessing and supervising student's ability to self-carry and, in that case, the above two studies did validate this finding.

*Model of school nursing.* The model of school nursing with the study participants was one school nurse per school, with the exception of one participant who covered two schools. This nurse did not mention this model as an issue with self-carrying. Elementary school nurses did comment that self-carrying was not necessary as the nurse was always present to provide the inhaler when the student needed it.

The study by Svavarsdottir et al. (2012), mentioned above, noted that when school nurses covered more than one school, it was often seen as a barrier to asthma management. Therefore, it would be beneficial to keep a model of one nurse per school. This was also validated by expert opinions in the recommendation that every school have a full-time school nurse for proper asthma management in schools (Lynn et al., 2014; Wheeler et al., 2006). Nurses who are readily available at one school site could more easily support self-carry practice as the nurse would be present to intervene promptly if needed. Another advantage for the daily presence of the nurse would be for her to work

towards getting students ready to self-carry instead of not allowing it merely because the nurse is accessible.

*Standing orders.* None of the 20 schools had standing orders or stock medication for inhalers. All had standing orders for other drugs. Therefore, a high percentage of students who self-carried were without back up inhalers. Nurses were not willing to commit the additional resources needed to obtain standing orders since it was easier to call 9-1-1 and activate the EMS rather than securing orders and stocking the drug. This was validated by a study that discovered calls to 9-1-1 had to occur when students were without inhalers and there were no standing orders or stock medication at school (Allen et al., 2012). The consequence of activating the EMS and having the fire department and paramedic respond could be a high cost to society as compared to having stock medication.

Nurses voiced frustration that paramedics could administer breathing medication when called but not school nurses. Two nurses admitted to using or stated they would use an extra inhaler for students who forgot or lost their inhaler.

The ALA (2014b) issue brief included a study identifying the lack of back-up medication as the most common barrier for students to safely self-carry inhalers. “Best practice for back-up medication is to institutionalize the availability of the medication by having a stock of medication on hand for use as needed” (ALA, 2014b, p. 6). Many nurses in the dissertation study echoed this as a major need. According to best practice recommendations and the nurses’ concerns, the stock medication and standing order option should be advocated for as a means to obtain a back-up inhaler. Expert opinion from the ALA provided a model policy for stock bronchodilators at school. This model

included a template policy for adoption with space to insert the school name. Provider information was also included for ordering stock medication. A question and answer document supported the model policy (ALA, n.d.b). This resource could be utilized to address the nurses' trepidations about it being too difficult to obtain standing orders and stock medications.

***Student behavior.*** Maturity and responsibility were needed for the nurse to support the self-carry practice. Lack of responsibility included behaviors such as losing and forgetting inhalers. Responsible behavior went beyond asthma management (e.g., ability to be serious, make good judgment, get good grades, activities, club involvement). Most students did not demonstrate this maturity and responsibility; however, parents still requested that the student self-carry. Nurses were uncomfortable with allowing self-carry as 100% of the nurses reported irresponsibility was the norm. Students who were followers and took the lead of others also were not good candidates for the self-carry practice as they could be swayed by peers.

In the literature, it was noted that school nurses were concerned about students' self-carrying inhalers due to students often losing or forgetting their inhaler (ALA, 2014b). This made nurses uncomfortable and validated the findings of the dissertation study. Addressing this behavior in terms of asthma education or assistance with obtaining back up inhalers might be an effective way to facilitate the self-carry practice.

***Student characteristics/development.*** Some nurses reported that all ages of students, including teenagers, were concrete thinkers and had limited decision-making processes so didn't think about the consequences of poor asthma management. This was supported in the literature as the teen brain does not fully develop up until 25 years of

age, with the last part being the frontal lobe (Squeglia, Jacobus, & Tapert, 2009). The frontal lobe supports many functions, such as planning, judgment, reasoning, problem solving, and impulse control (Substance Abuse and Mental Health Services Administration, 2014). These tasks are critical in the decisions a student must make when self-carrying. Nurses observed students' difficulty with these processes.

Kindergarten through fourth grade students were able to follow the inhaler administration process well, but they were not mature enough to know when to use the inhaler and when to seek care. The curiosity typically seen at this age suggested possible safety issues with sharing, poor judgment, and being a copycat. No nurses at the elementary level encouraged the self-carry practice. In one study (ALA, 2014b), it was noted that more than 80% of the over 1,500 respondents believed that students 8 years and older should be afforded the opportunity to self-carry if they were developmentally ready. This was not validated in the dissertation findings as the nurses did not facilitate self-carrying at age 8. Overall, the nurses supported self-carry at the start of high school, by 14 or 15 years of age.

Fifth and sixth grade students possessed some maturity. Obstacles to asthma management were identified as lack of foresight and lack of control. Overall, the nurses believed inhalers should be in the nurse's office. Students routinely did not present to the nurse's office as they did not want to miss class or recess. Poor behavior choices beyond asthma control influenced the nurse to discourage self-carry (e.g., not eating breakfast, not wearing glasses). A survey by the ALA (2014b) discovered that elementary school-age children might not be ready to self-carry. This validated the nurses' lack of self-carry facilitation at this grade level.

Seventh and eighth grade students experienced peer pressure issues, wanted to fit in, and not be seen as different. This often equated to poor asthma management and nurses sought to keep inhalers in the nurse's office. Children this age often participated in dangerous activities and used their inhaler as a safety net if they experimented with smoking. Expert opinion, not specific to self-carrying but addressing medication adherence in general, reported that school-aged children might fear stigmatization as a reason for not taking medications at school (Desai & Oppenheimer, 2011). This information validates the dissertation findings that students did not want to be seen as different. Providing asthma education for non-asthmatic students might assist with acceptance. Another study reported that students in middle school were capable of self-carrying inhalers but this hindered communication with the school as the students were self-managing their symptoms (Egginton et al., 2013). This was contrary to the nurses' decisions that middle school students were not encouraged to self-carry but supported the nurses' belief that self-carrying equated with poor asthma management and communication.

High school students possess a mindset of invincibility. At this stage, they need to practice independence therefore the high school nurses believed it was safe for students to self-carry as the nurse could be present as a back-up for them. Despite all high school nurses wanting students to self-carry, nurses thought these students sometimes acted impulsively when they took additional doses, assuming that *more was better*. Notwithstanding these concerns, the need to work on independence before adulthood triggered all seven nurses to support the self-carry practice.



The literature supports the ability of adolescents (12-18 years) in Grades 7 to 12 to provide self-care for their asthma (Altay & Çavuşoğlu, 2013). This study did not clearly identify whether self-carry was included; it studied self-care. Altay and Çavuşoğlu (2013) noted, “adolescents may have the social, emotional, physical, and mental maturity to assume responsibility for their illness” (p. 239). This would support the high school nurses’ decisions in promoting self-carry within the high school population. The elementary school nurses might consider allowing students aged 12 years and older the opportunity to self-carry.

Two reports informing the self-carrying of rescue inhalers were limited and did not include developmental issues. One of these studies addressed the self-carrying of EAI and reported that teenagers felt embarrassed by having to self-carry, were irritated by having to carry the EAI all the time, had a sense of invincibility in that they did not think anything would happen to them, and did not want extra attention from self-carrying (Macadam et al., 2012). Similarly, this dissertation study found that peer influence impacted self-carry behavior. In addition, participants thought the idea of invincibility impacted teenager behavior with self-carrying inhalers. Desai and Oppenheimer’s (2011) report validated that a sense of invincibility among adolescents might be a reason for asthma medication non-adherence. Developing education and interventions to support students through these typical developmental issues could be beneficial to the self-carry process.

*Impoverishment.* Students in poverty used the ER and urgent care for the management of their asthma instead of a traditional primary care provider. Care in these settings is often rushed and time is limited for asthma education. The school nurse often

serves as a primary care provider with this population. If the nurse provided a resource for a doctor appointment, access was often an issue with no transportation, working parents, no phone, no money, or no insurance coverage. Medicaid barriers included a reapplication process every 6 months therefore there was no coverage if Medicaid assistance expired or parents had yet to reapply. This equated to no medication or available prescription. Students in poverty would often share or borrow a family member's inhaler. Often with impoverished students, nurses wanted the inhaler kept in the nurse's office so it would not get lost; at other times, nurses preferred that students self-carry so the inhaler would not be left at school.

The study by Svavarsdottir et al. (2012) included information that could indirectly validate the impoverished students' issues affecting the self-carry practice. Socio-economic barriers were seen as inability to get transportation, access care, and sharing of inhalers among family members because of limited family funds (Svavarsdottir et al., 2012). The nurses in this dissertation study reported similar issues when addressing the self-carry practice. Addressing poverty issues can be beneficial to the self-carry practice in terms of the availability of back up inhalers and access to health care for proper medical management and educational support of asthma.

A review 30 studies showed that lack of financial resources often prevented families from having asthma medication at school. Obtaining a second set of medications for school was a barrier in caring for students with asthma (Lineberry & Ickes, 2015). While this report did not address the self-carry perspective, implications indirectly spoke to the self-carry issue in the school. Addressing access to medication in terms of

supplying the school with medication was critical in caring for self-carry students as two inhalers would be needed; one to self-carry and one for back-up at school.

***Trust.*** Trust was equated with a feeling of comfort in knowing that the student could manage the self-carry process appropriately. Trust took time to develop and was needed before the nurse supported the self-carry practice. If a nurse did not trust the student, then the student did not self-carry. Self-carry was not prevalent in elementary school as only 1 of 13 school nurses made families aware of the self-carry option; only 4 of 13 nurses had students who self-carried. This suggests that trust was not evident in the elementary school settings overall. All seven high schools allowed self-carry, but nurses expressed being uncomfortable at times.

Literature addressing trust as a component to school nurse decision-making with the self-carry issue was not located. This warrants further exploration into this practice by school nurses.

***Student knowledge deficits.*** Knowledge deficits among students were described by the nurses as missing signs of worsening asthma, improper inhaler administration, overuse, and overall inadequate asthma management. This led nurses to want to keep the inhalers in the nurse's office. When an increase in workload or the school philosophy opposed asthma education, the educational needs went unmet and the nurses had difficulty supporting the self-carry practice. Asthma education with students was seen as needing to be repetitive. Students who self-carried had decreased opportunities for asthma education. Students who secretly self-carried also had less asthma education because the nurse did not have an opportunity to assess the student's stage of asthma and educational needs. This led to nurses discouraging the self-carry practice.

Students in poverty had increased asthma educational needs as perceived by the school nurses. These students did not get asthma management by a primary care provider, or preferably a pulmonologist. They typically received their asthma care in the ER or urgent care; environments often rushed and limited on education.

Numerous intervention studies about asthma self-management in children and adolescents 18 years of age and younger reported favorable outcomes after an educational intervention (Guevara, Wolf, Grum, & Clark, 2003). However, these studies were not specifically focused on the self-carry issue. One recent study examined a school-based intervention that implemented training among teens and found that the students in the treatment group scored significantly higher in their perceived aptitude to list asthma triggers, performed tasks to breathe easier, made decisions on medication needs, and knew their asthma medication names (Srof, Velsor-Friedrich, & Penckofer, 2012). Although this study did not specifically measure self-carry components, these capabilities would be necessary for the safe self-carry process.

Research-based educational programs and interventions are important for the nurse to implement or advocate and coordinate. These programs could aid in making the self-carry process safer and work towards preparing students to self-carry.

***Parental knowledge deficits.*** All 20 participants verbalized issues with parental knowledge deficits, often perceived as a lack of understanding about the gravity or seriousness of asthma as a chronic condition. This manifested in parents who over medicated, did not seek care when warranted, and kept secret from the nurse that their child was self-carrying. These issues contributed to a lack of trust in the nurses' mind about the ability for parents to decide on the self-carry practice and producing unsafe

self-carry situations. The knowledge deficits of parents contributed to the elementary school nurse's decision to discourage self-carry practice. High school nurses saw the need for fostering independence along with the large campus size as more important factors to support self-carry rather than parental knowledge deficits.

A review and study reported limited parental knowledge and a lack of respect for school nurse expertise and role as barriers for caring for asthmatic students (Lineberry & Ickes, 2015; Major et al., 2006). Another study on asthma medication access in schools reported that parents were a barrier in terms of providing refill medications, not signing permission slips, and not getting AAPs or signatures from providers. One nurse in this ALA study said, "parents just tell the students to hide it in their backpacks. That to me is dangerous" (ALA, 2014b, p. 4). This study found that parental engagement was critical for the success of the self-carry issue, and that a lack of parental involvement resulted from inadequate understanding about the seriousness of asthma (ALA, 2014b). Another study of best practices in asthma management also revealed that parents did not understand the seriousness of asthma and its consequences. It found that parents often did not understand the differences in inhalers as well as the risks of overmedicating their child (Major et al., 2006).

These findings validated what nurses in this dissertation study revealed as barriers regarding parental knowledge deficits. Parental education and involvement interventions are important to implement. Not knowing which students self-carried due to students and parents purposely or unknowingly keeping it secret from the nurses made for difficult asthma management. If nurses perceived that parents knew the gravity of the illness, possessed knowledge about the disease and its proper management, understood the role

of a school nurse, and didn't keep the self-carry practice a secret then self-carry support might increase. Parental education and communication are critical.

***Supportive teachers.*** Teachers were a critical component in the nurses' minds when students self-carried inhalers. The majority of teachers helped make the process safer by being the "*eyes and ears*" of the nurse. Teachers reported inhaler abuse, inhaler use for documentation, and students who self-carried in secret. They acted as a gateway to the nurse. Occasionally, teachers would not be helpful. Athletic trainers in the high school setting allowed the self-carry practice with ease as they could not administer the medication. Some would communicate asthma issues with the nurse.

While one study about asthma care, barriers, and best practices in schools did not specifically study teachers and the self-carry issue, the findings could be extrapolated. For example, teachers were often not trained in asthma care, so they might not recognize signs and symptoms, waiting too long to send a student to the nurse (Major et al., 2006). This finding did not necessarily validate the dissertation study findings as the nurses rarely mentioned teachers as a barrier. They also did not mention teachers missing signs and symptoms related to the self-carry issue. The nurses instead felt teachers facilitated the self-carry process.

***Safety net.*** The study participants reported the need for a comprehensive safety net including various components. Back up inhalers, asthma action plans (AAP), the nurse, and the EMS were seen as providing a level of safety for students who self-carried.

***Back up inhalers.*** The most prevalent, desired safety net component for the self-carry process was the availability of back up inhalers. In reality, the availability of back up inhalers was extremely low in all of the participants' schools. This equated to

increased anxiety within the nurses and manifested by increased 9-1-1 calls to activate the EMS, frustration at the lack of standing orders for inhalers, and decreased support of the self-carry practice. Two nurses reported using or had the intent to use an extra inhaler with no name as a backup inhaler in extreme situations.

The ALA (2014b) issue brief reported a survey of over 1,500 school personnel regarding the availability of back-up inhalers. The lack of a back-up inhaler was concerning, “students lose their inhalers on a regular basis and have no back up inhaler at school” (p. 6). No state laws addressed the need for a back-up inhaler as a condition to self-carry. Ninety-two percent of participants reported that a back-up inhaler was important but only 28% of participants reported that their school required a back-up in order to self-carry (ALA, 2014b). The findings in the dissertation study were partially validated by this study; the majority of nurses also felt back up inhalers were important. The difference was that no policy required a back-up inhaler in order for students to self-carry.

The study by the ALA (2014b) reported uncertainty on whether the lack of back up inhalers influenced the nurse’s decision when deciding on a student’s ability to safely self-carry. This dissertation study did find that the school nurses were uncomfortable at the lack of a back-up and it contributed to the decision to not support the self-carry practice in the elementary setting.

*Asthma action plans.* Asthma action plans specific to each student were considered another safety net component in planning for appropriate asthma management. Nurses reported difficulty obtaining these plans from doctors and parents. As students got older, the number of asthma action plans decreased.

The role of AAPs in successful asthma management was identified as one of five components needed for effective asthma monitoring (Wheeler et al., 2009). One of the national goals in Healthy People 2020 is to increase written instructions as to asthma management according to the NAEPPs guidelines, including the self-carry option (healthypeople.gov, 2014). A completed AAP is critical for the effective management of asthma in the school setting and can assist the self-carry process. The process of obtaining AAPs needs to be improved. Egginton et al. (2013) reported that many AAPs have a box that can be checked by the health care provider stating that students with asthma can self-carry. None of the dissertation study nurses mentioned AAPs being specific to the self-carry practice; this would be a good addition for effective self-carry management and needs advocacy.

*Nurses.* The nurses considered themselves as an important safety net resource for students who self-carried, specifically as back up and support for self-carry students. They reported themselves as being knowledgeable in asthma management with critical thinking skills that assisted with the self-carry process and support. Experience in the field of nursing was mentioned as a benefit.

There were no studies that addressed the self-carry of inhalers with nurse support or as backup. One study specific to self-carrying EAI in high school found that periodic checks by the school nurse to verify the student had an EAI on hand did not increase the likelihood of the student having their medication with them, but the students who did self-carry were more likely to have medications that were not expired (Spina et al., 2012). Although this study specifically addressed self-carrying of EAI and a specific school



nurse intervention, it did support the dissertation study finding that school nurses do provide support for the self-carry process in some way.

*Emergency medical system (EMS).* The EMS was used as a safety net when nurses were unable to reach parents and when medication was either lost or left at home and there was an exacerbation warranting the need for a rescue inhaler or treatment. Some nurses admitted using EMS as a way to access back-up medications. As stated previously, this dissertation finding was validated by a study that discovered calls to 9-1-1 had to occur when students were without inhalers and there were no standing orders or stock medication at school (Allen et al., 2012). This action may prove costly to society as compared to utilizing a stock medication.

Literature regarding EMS, decision-making, and the care school nurses provide students surrounding the self-carry issue is extremely limited. An exploration of this topic may be warranted especially in terms of a cost benefit analysis.

**Control.** The Arizona self-carry law gives control to the parents making the self-carry decision. Nurses have a perceived sense of control when the inhaler can be housed in the nurse's office or when the nurse authorizes the self-carry process with students. The nurses voiced the need to have some control for documentation, correct usage, prevention of inhaler loss, sharing, and for overall asthma management. They insisted that it was for the safety of the child and protection of the nurse in terms of liability. There might also be a covert need for control as part of human nature. When parents and students kept the self-carry practice a secret, the nurse did not have control. Some school districts attempted to give some of the control to other people by having doctors, students, nurses, and principals sign the self-carry permission slip.

Literature addressing control concerning the issue of the inhaler self-carry topic in the school setting and decision-making of school nurses or similar topics were not located. This could warrant a further exploration into this topic.

***Nursing philosophy.*** The philosophy or belief of the nurses in the elementary school was that students should not self-carry. Twelve out of the 13 (92%) of the elementary school nurses did not make parents aware of the self-carry option. When parents brought the self-carry topic to the elementary school nurses' attention, all 13 nurses tried to dissuade parents from the practice or used paperwork as a means to complicate the process. Only 4 of the 13 (30%) elementary school nurses had any students self-carry at the elementary level. Overall, the nurses were seen as a barrier at this level.

At the high school level, 100% of the nurses encouraged and supported the self-carry practice. These nurses broached the self-carry topic; some mailed self-carry permission slips home for all asthmatic students. The nurses were seen as facilitators to the self-carry process.

The literature reported that students in middle school and older were often perceived as having the capacity to safely self-carry and self-administer asthma inhalers. However, self-carrying usually started too late in a child's life (Egginton et al., 2013). This validated the high school nurses' philosophy that their students should self-carry in contrast to the elementary school nurses' actual practices of not making parents aware of the self-carry option or manipulating the situation so the students did not self-carry. The elementary schools in this dissertation study included middle school students, as middle

schools were not separate. Nursing care could be developed to support more students in the elementary setting to self-carry or work towards the self-carry practice.

In another study, 96.6% of 2,049 school nurses felt that the self-carry of rescue inhalers was appropriate (Allen et al, 2012). This did not correspond to this dissertation study, as only 35% of the 20 school nurses encouraged the self-carry practice; the other 65% of elementary school nurses preferred that students not self-carry.

***Internal policy.*** The nurses followed their intuition and common sense in decision-making regarding the self-carry issue. For some, that was to follow the law or policy. For others, it was to put the student's safety above all else and not follow the law or policy (e.g., giving students an extra unlabeled inhaler to use as a backup, not requiring all the components of the permission slip to self-carry). Some nurses were unfamiliar with the law or policy, but had an internal policy to have all asthmatic students self-carry for immediate access to breathing medication. Nurses also mentioned the personal decision to rescind the self-carry practice if a student's behavior warranted taking away the privilege.

No literature supported the use of a nurse's own internal policy in caring for students who self-carry inhalers. In a study regarding asthma action plans, nurses created and implemented their own procedures for the safe and effective care of their asthmatic students (Egginton et al, 2013). Another study regarding best practices and barriers for asthma care in schools reported that school nurses knew they could not help an asthmatic student with no inhaler without breaking laws that threatened their nursing licenses. It was not uncommon for nurses to admit that they might use another student's rescue inhaler to save a student in respiratory distress (Major et al., 2006). This was similar to

some of the findings in the dissertation study; nurses created their own processes to support the self-carry student and sometimes those internal policies conflicted with the law. This could have implications, placing a nurse's licenses at risk. Advocating for policy changes regarding permission slips, standing orders, stocking medications, and self-carry discipline issues might be a better option for the nurse.

***Guiding praxis.*** Nurses' practice experiences in caring for asthmatic students in the school setting impacted the self-carry decisions, primarily with an outcome that discouraged the self-carry practice. Praxis, or experiences in the field of nursing, brought out stories of lost and forgotten inhalers, severe exacerbations, overuse, and student deaths due to asthma. Nurses recalled these experiences as reasons to be cautious with the self-carry practice. Some nurses recalled that asthma maintenance inhalers were used by students during an exacerbation instead of their rescue inhalers when they expressed discomfort with the self-carry practice. Praxis in favor of the self-carry practice involved the difficulty of getting medication to students out on the campus or playground in a timely manner, so self-carry was supported.

No studies address the nurses' praxis related to the self-carry of inhalers. One research study mentioned that older nurses with more years of school nurse experience were more apt to practice asthma management behaviors. These asthma management behaviors did not specifically include self-carry, but included assessments, asthma education, and maintaining AAPs (Quaranta & Spencer, 2015). Within the dissertation study, the average age of the nurses was 52 and the average school nurse practice experience was 9 years. This age and time in practice provided the opportunity for practical experiences that weighed on the nurses' decision-making process.

Another study specifically asked school nurse participants to describe experiences that were emergencies in regards to rescue inhalers, EAI, or glucagon delivery devices. Of the many stories, the most common issues were not being cared for appropriately at home and not bringing their medication to school (Allen et al., 2012). The nurses in this dissertation study shared similar experiences in their practice; this made them uncomfortable with the self-carry process. Praxis appears to be a critical component of the nurses' perceptions and decision-making processes regarding the self-carry practice.

***Assessing student ability.*** Nurses assessed students' ability to self-carry by their own accord or through school district forms requiring that assessment. This role matched the recommendation of the NHLBI (2014) that the nurse should assess the students' readiness to self-carry and communicate that to parents and health care providers. Nurses discussed communication with parents but not with providers. Some district forms were permission slips that required an assessment by the nurse and a signature by the doctor, nurse, principal, student, and parent stating that the student was able and had permission to self-carry. This section of the permission slip was filled out by the nurse and included questions about the assessment, such as "Student is knowledgeable of purpose of individual medication, yes or no?" This allowed the nurses to address any knowledge deficits and coach the student about self-carry educational needs. Another type of permission slip required a physician or nurse practitioner signature stating that the student was responsible, understood the process, and could self-carry. In the elementary setting, the process that typically followed a parent's request to self-carry was that an assessment occurred, education was provided if needed, and then the student would self-carry. In the high school, the process was customarily that the student would self-carry and the nurse

would do an assessment of the student's situation if there was an exacerbation that brought the student to the nurse's office. Only one high school nurse remarked that an assessment was done before self-carry began.

Within the literature, two assessment tools incorporated questions for the student to answer that assessed knowledge considered necessary to safely self-carry an inhaler. One tool was developed by Flower and Saewyc (2005) as a pilot study. The other tool was found on the ALA (n.d.c) website under resources for parents and practitioners. This assessment tool had an online delivery with the score tallied automatically; a paper and pencil questionnaire was also an option. An online training course was identified that offered training on how to use the assessment tool. Unlike the permission slip, these tools asked the students questions rather than asking the nurses to respond, such as "What do the lungs do?" (ALA, n.d.c) and "When your breathing feels bad, what do you do for it?" (Flower & Saewyc, 2005). Both tools were designed for an adult to implement or interpret by asking, "What part of your body is affected by asthma? Can you show me?" (ALA, n.d.c) and "Show me how to use your inhaler" (Flower & Saewyc, 2005). None of the nurses in our study mentioned the use of an assessment tool, instead they followed the permission slip requirements, relied on the practitioner's signature that the student was capable, or performed a personal informal assessment. Educational content for nurses in the form of self-carry assessment and resources to support this function might be useful in assessing for the self-carry process.

Assessment of a student's ability to self-carry was often addressed by the self-carry law, as some states required the health care provider, the school nurse, or both to provide an assessment that students could self-carry an inhaler in school (ALA, 2014b).

Arizona did not require any of those elements in the law. Eighty-four percent of schools reported that their students received an assessment before being allowed to self-carry their inhaler (ALA, 2014b). This validated the nurses' assessment findings in this dissertation study as pre-carry assessment was often mentioned as a tool when deciding on the self-carry issue by a majority of the nurses except for the high school nurses.

Lastly, in assessing a student's ability to self-carry, standardized protocols and tools were recommended by the ALA (2014b). As previously mentioned, there are available tools but they need to be in the protocols so all students received a similar and safe assessment as well as a self-carry opportunity.

**Consequences and care.** The consequences of the nurses' decision-making process culminated in the elementary nurses not allowing or supporting self-carry practice. Few elementary school nurses allowed self-carry as the result of parental request. All high school nurses allowed or supported self-carry practice. In the substantive theory presented in Chapter IV, one side of the teeter totter was weighted down, demonstrating a support of self-carry practice; the other side was further from the ground, showing the lack of support for self-carry practice. The nurses could manipulate the issue by means of keeping secrets, dissuading parents from self-carry practice, and using paperwork. The nurses could also micromanage, foster independence and empowerment, and let it go. These consequences were explored for the meanings.

**Manipulation.** Manipulation of the self-carry issue was seen within the nurses' decision-making process and behaviors. This manipulation included keeping secrets, talking parents out of the self-carry option, and using paperwork to the nurse's advantage.

*Secrets.* A form of manipulating the situation in the nurse's favor was keeping the self-carry option a secret from parents. Twelve of the 13 elementary school nurses kept the self-carry option and policy a secret from the parents. The nurses shared the policy specifics and processes if it was brought to their attention by the parents. This was done so the inhalers could be kept in the nurse office. None of the high school nurses kept this secret. They openly shared and encouraged the self-carry process.

There was no literature found that addressed the secrets nurses kept from parents regarding the self-carry option. This may warrant research into this issue. There were a few findings in the literature addressing parent notification and ethics that might indirectly address the topic of nurses keeping the self-carry option a secret. The ALA issued this statement on their website:

Many schools do not properly communicate the procedures or paperwork required to allow a student to self-carry their medications. A school must have a clearly written policy that is properly shared with parents or guardians of a student with asthma. (ALA, n.d.a, para. 10).

This finding indirectly addressed the issue of secrecy within the dissertation findings. Apparently, the ALA's statement might mean that districts or schools have an oversight, systems, or process issue in communicating with parents. The findings in this dissertation study revealed that some school nurses purposely kept information about the right to self-carry from the parents.

Typically clients, in this case parents and students, trust the nurse to provide honest care in words and practice. Trust is gained when nurses practice in an honest and ethical way (Shahriari, Mohammadi, Abbaszadeh, & Bahrami, 2013). The practice of



nurses keeping secrets and manipulating the situation using paperwork is at odds with garnering trust. Another ethical code for nurses is, “The nurse promotes, advocates for, and protects the rights, health, and safety of the patient.” (Winland-Brown, Lachman, & Swanson, 2016, p. 269). Keeping secrets appears to be in conflict with this ethical code for nurses as well. Making parents aware of their right and giving them the respect, autonomy, and empowerment to make that decision for their own children appears more appropriate than keeping that right a secret. Nurses could be prioritizing the safety of students over their rights. Weighing a student’s safety higher than the protection of parental rights is an ethical dilemma. Another dilemma with keeping the secret could be the ethical concept of paternalism, a form of projecting power over clients (i.e., parents and students). According to the American Nurses Association (n.d.), the definition of paternalism is when,

Healthcare professionals make decisions about diagnosis, therapy, and prognosis for the patient. Based upon the health care professional’s belief about what is in the best interest of the patient, he/she chooses to reveal or withhold patient information in these three important arenas. This principle is heavily laden as an application of power over the patient. (p. 2).

Self-carry practice could be seen as a form of therapy; what is therapeutic for the student’s asthma management is undermined by this paternalistic perspective.

In light of the conflict between the nurses’ practice of keeping secrets and ethical codes in nursing practice, this topic should be explored in more detail. Education of nurses encompassing ethics, legislation, and policy changes could assist nurses to make

more appropriate decisions and avoid the need to keep the self-carry option a secret. This could be beneficial to the self-carry issue.

*Talking parents out of the self-carry option.* Another form of manipulating the situation was talking parents out of the self-carry option. All 13 elementary school nurses would try to dissuade parents from the self-carry process if parents initiated the self-carry issue. Nurses reported success with this dissuasion strategy, accomplishing this by stressing negative outcomes and risks to self-carrying (e.g., inhalers lost, forgotten, stolen). They also conveyed to parents the benefits of keeping inhalers in the nurse's office, such as nurses bringing inhaler to student faster and being able to assess the child's appropriate use of the inhaler. The benefits of the self-carry practice were not revealed by the nurses, such as immediate access, less missed class time, and independence. This biased information did not afford the parents the ability to make an informed decision about the option to self-carry. Some nurses expounded on the element of parental liability if other students accessed the inhaler and used it, causing some parents to back down from their request. Nurses portrayed a battle to convince parents they should not allow their student to self-carry. This behavior was observed in the elementary school nurses; it did not occur with the high school nurses.

Literature addressing the practice of nurses talking parents out of the self-carry issue was not located. This could warrant a further exploration into this practice by school nurses.

*Using paperwork.* Both elementary and high school nurses manipulated self-carry in their favor by using paperwork to their advantage. Elementary school nurses used paperwork to discourage parents in following through with the self-carry process. Just the

mentioning of the required doctor's signature would often stop the process, as coordinating appointments and obtaining signatures was burdensome to parents for a variety of reasons (e.g., time, lack of insurance, lack of a medical home). This facilitated the desire of nurses to keep inhalers in their office.

In contrast, high school nurses used paperwork in their favor to facilitate self-carry. They broke policy to support self-carry by not requiring paperwork or overlooking the doctor signature on the permission slip. The nurses often said they would rather have the student self-carry than have the permission slip on file, reminiscent of the adage, "It is better to ask forgiveness than to ask for permission." Other nurses did not obtain the yearly parental permission to self-carry, instead obtained it the first year and used it for the remaining school years. This was not in compliance with Arizona legislation as the law states annual parental permission is needed to self-carry.

There was no information in the literature validating the findings regarding the use of paperwork as a tool to favor the nurses' perspective. The ALA (2014b) issue brief reported success with having more families complete self-carry authorization by simplifying the forms and permission needed. One method that has had a modicum of success is an AAP, serving as a treatment plan and a self-carry authorization form when signed by the parent and health care provider, thereby eliminating the need to complete and track multiple forms (ALA, 2014b). This information would be of benefit to the high school nurses in this study, but elementary school nurses would likely see an increase in the self-carry practice if paperwork was simplified, antithetical to their philosophy of not supporting the self-carry practice at the elementary level.

***Micromanaging.*** Elementary school nurses appeared to micromanage their students with asthma. This was viewed as essential to better asthma management because nurses had control of the inhaler. Nurses could assess, document, teach, and control for lost or forgotten inhalers. From the nurses' perspective, students who self-carried their inhaler and managed their asthma themselves did not manage it appropriately. If the elementary student self-carried, the nurses still wanted to be included, informed, and able to assess the student after each inhaler use, professedly for documentation and assessment purposes. This finding was supported by Ekim and Ocakci's (2013) study recommending that nurses continue to supervise and be involved in a child's care even as children increase their own self-care. Elementary school nurses believed that students who managed their asthma and self-carried had increased exacerbations and 9-1-1 calls due to overmedicating, pushing themselves, or forgotten medications. Alternatively, high school nurses perceived that they were not micromanagers, instead supporting a more responsible role for their students.

One element of nursing supervision and support still in need of development is support for the preadolescent student. Despite the lack of self-carry studies, nurses' management of students with asthma who self-carry could be more effective if students were transitioned with more responsibility versus micromanaging. Nurses would be tasked with providing that difficult balance between supporting/supervising and micromanaging.

***Fostering independence and empowerment.*** Both elementary and high school nurses expressed awareness that self-carrying fostered independence and empowerment; all nurses reported this as a benefit to the self-carry practice. Nonetheless, elementary

nurses still did not encourage this practice. All high school nurses supported and encouraged self-carry. Six out of the seven high school nurses viewed it as necessary for independence, as it eased students into the real world of adulthood when they would be charged with the complete management of their own asthma. High school nurses viewed their role as supportive or as back up. As this independence and empowerment increased, the nurse's management of the student's asthma decreased. Empowerment was seen as the students' ability to function more effectively in their role as students as well as socially. When they self-carried, the students were not extricated from class or their social situations.

Literature regarding independence and empowerment as a reason for school nurses to support the self-carry practice could not be located. An exploration of this topic may be warranted.

***Letting it go.*** Conceding to the law was perceived as letting it go. The motivation to manipulate or foster independence was not the driving force behind letting it go, but instead felt like giving up control of asthma management when nurses were not successful with manipulating the situation in their favor. The realization that, ultimately, the law was not in favor of nurse control led to the realization that they had no choice but to allow students to self-carry. This attitude or consequence was observed in a few elementary school nurses who had students self-carry on campus. In contrast, the high school nurses were motivated to promoting independence and empowerment, not perceiving it as letting go.

Literature regarding *letting it go* as a function of school nurses in caring for students who self-carry in the school setting was not located. An exploration of this topic may be warranted.

### **Study Critique**

**Strengths.** One strength of this study was the utilization of grounded theory methodology. This allowed for theory to be discovered from the participants' voices. Participants led the interviews. The interview guide was utilized; probes and additional questions were added from what the nurses shared and experienced. This provided a rich and meaningful discovery of how nurse participants perceived and made decisions regarding the self-carrying of inhalers by students in the school setting.

The use of open-ended questions in the interview guide was a strength as it allowed the participant to lead the discussion. This lessened the need for the researcher to guide answers, thereby decreasing bias.

A secondary reviewer of the topics analyzed the various dimensions of the topics. The researcher shared the original 19 topic data matrixes, in the form of data tables, with another researcher during the analytic process. These tables also included cross referencing of data between topics. A review and approval of the information and process was achieved. From these 19 data matrixes, 16 categories were developed and captured in the context, conditions, action, and consequences matrix. This provided insight that the topics and analysis made sense and were not derived from the researcher's sole interpretation. The secondary reviewer added credibility to the data analysis findings.

A variety of school districts were utilized. Twenty school-nurse participants from 10 school districts provided data from a variety of perspectives. Rich data and findings were compared and contrasted within and between the many districts and their nurses.

**Limitations.** One limitation of the study was that the findings are not transferable beyond the participants. These nurses comprised a sample of convenience, volunteers recruited from nurses' meetings and conferences representing 10 school districts. Therefore, the findings would not be applicable to all school nurses.

The use of a recording device was noted as a possible limitation, potentially hindering answers and communication. A few participants relayed minimum discomfort about being recorded, initially watching the researcher during set up and looking at the recorder during the beginning of the interview. As the interview progressed, body language shifted to decreased eye contact on the recorder and less fidgeting of the hands as the participants appeared to forget about the recording. This may have been a limitation in the beginning of the interviews.

Self-reporting as a means of data collection was also a limitation. Self-reporting of participant perceptions, values, beliefs, feelings, and behaviors could diverge from actual behaviors, beliefs, and feelings that the participants actually experienced while providing nursing care to these students. Observations of the participants in practice was not utilized by the researcher.

Data were collected at a single moment in time. The data collected could have been influenced by the chosen day and time. Interruptions from students, fatigue at the end of the day, and physical or emotional sensations were but a few examples of potential

influences on the sharing of experiences. A longitudinal study, collecting data over time, might have provided additional valuable findings.

### **Implications of the Study**

There are several implications that may be derived from this study in order to assist school nurses and students with the self-carry process. Implications for nursing practice, nursing science, and policy development are important to explore.

**Nursing practice.** Nurses and their students would benefit if school nurses were familiar with laws and self-carry policy. Knowledge beyond a general overview of the law could provide rich opportunities for school nurses to adhere more effectively to the spirit and intent of laws and policies if they knew what those laws and policies specifically stated. This could relieve the school nurse and school from liability if the laws and policy were appropriately implemented. As the law stated, “A school district and its employees are immune from civil liability with respect to all decisions made and actions taken that are based on a good faith implementation of the requirements of this paragraph” (Arizona State Legislature, n.d., para. 36). School nurses need to understand the law to be able to employ a good faith implementation. If the nurse fully understood the law, policy, and specifics, then the nurse might be able to be an advocate for change. This advocacy for legislative and policy change could be incorporated into the school nurse’s practice.

Education regarding self-carry readiness assessment tools and asthma guidelines for best practices would be beneficial for the nurses and students. This would enhance the self-carry process as pre-carry assessment could be performed in a standardized format



with a valid and reliable tool. The most effective approach to self-carry assessment would assist the nurse in providing optimal care.

Another implication for the nurse's practice is the need for a plan and process to support students who self-carry. The perception of the elementary school nurses was when students self-carry, asthma management decreases and EMS calls increase. Better asthma management would likely decrease EMS calls and improve the student's self reliance. The development of an appropriate plan of care utilizing the nursing process might make the nurse more comfortable and the self-carry process safer for the student.

The practice of the nurses keeping the self-carry law a secret and/or manipulating the issue does have implications for school nurse practice. There are ethical concerns when secrets or manipulation occur. Providing opportunities for discussion and educational programs for nurses to explore this ethical issue could be beneficial, allowing nurses to develop insight on best practices that are ethically sound and safe for the students.

Advocating for asthmatic students in general, but particularly for impoverished students, might make the self-carry process more effective in terms of medication access and healthcare provider access. This advocacy can occur from an upstream perspective, addressing core issues. Medicaid barriers, job creation, affordable housing, educational opportunities, and public assistance could be addressed from a school nurse perspective. This could include voting, networking through coalitions, lobbying, research, and knowledge dissemination to influence change and decrease the challenges that poverty presents to school-age children, teenagers, and their families.

Creating and facilitating processes that are more effective for school nursing practice could benefit students, parents, and health care providers in addressing self-carry as well as promoting safety. Streamlining paperwork with standardized and simplified forms could have positive effects. Asthma action plans that serve as both a plan of care and a permission slip allowing self-carry practice could also assist. Working with coalitions or groups to revise current asthma action plans could provide better outcomes in terms of including various perspectives and considering opposing viewpoints.

**Nursing science.** In light of information from nurses that self-carry students do not manage their asthma optimally, developing and testing of interventions that take into account student preferences and current technology is warranted. A creative and modern scientific intervention is the use of electronic media and tools to assist students, parents, nurses, and practitioners in the self-carry process. For example, electronic monitors currently measure medication administration, date, and time (Patel, et al, 2013). These monitors could capture trigger information, symptoms, pre- and post-inhaler-use assessment, number of inhaler doses available, and other features that could enhance the self-carry process. Monitor data could be communicated to parents, nurses, students, and healthcare providers to allow effective and efficient self-carry practices. This form of telehealth would require networking among all stakeholders.

Another similar intervention to assist students in proper asthma management that includes safe self-carry practice is the development of appropriate applications (apps) to assist students with asthma decision-making and education to enhance and support the self-carry practice. Many exist but do not provide complete and trustworthy information and tools for proper self-management or self-carry support (Huckvale, Car, Mossison, &

Car, 2012). Utilizing a tool or app, students could have proper asthma content readily available, diary their symptom and experiences daily, and much more through their phone or other electronic device. This could take into account student preferences and might include engaging formats such as games, chats, text messaging reminders, and electronic notifications to vetted healthcare professionals.

Other perspectives that warrant investigation are the students' and parents' perspectives regarding the self-carry practice. Studies similar to this dissertation study but with a student and/or parental focus could be valuable. Learning about their experiences could provide information needed to enhance this recommended practice. Further study could provide a better understanding of self-carry issues as the nurse, student, and parent work closely together. Capturing the student and parental perspectives, along with those of school nurses, could provide for opportunities to draft interventions or changes in legislation or policy that support all of the stakeholders' needs.

Future research studies should address knowledge deficits among students, nurses, and parents. With this foundation, developing and measuring the effectiveness of educational interventions for the school nurses, students, and parents about self-carry issues could enhance asthma outcomes and improve the students' over-all health.

In addition, research that addresses any component within the substantive theory would be beneficial to better understand the risks and benefits of students' self-carrying rescue inhalers. Manipulation by nurses to keep self-carry practices a secret, discouraging parents on self-carry options, and utilizing paperwork to one's advantage are important issues to explore as these are not documented in the literature.

Research in terms of tool development to assess student readiness to self-carry would be valuable and beneficial to school nurses. For example, conducting validity and reliability testing of the two assessment tools found in the literature would be a significant addition to the science of self-carry.

Comparison of self-carry laws between states could inform policies, paving the way to allow students the right to self-carry. Research about school nurse perspectives, attitudes, and decision-making within the differing legal models adopted by various states. From these comparative and descriptive studies, legislative changes or interventional studies could be developed.

One potential study could examine asthmatics students who self-carried their inhaler and evaluate their outcomes (e.g., exacerbations, doctor visits, EMS activations, absenteeism, grades) as compared to asthmatic students who did not self-carry. A well-crafted study could provide valuable outcome information about the safety of self-carry practices, thereby benefiting students and assuring nurses.

**Policy development.** Policy development is an area that can have meaningful implications to assist nurses and students who self-carry. A significant issue nurses shared in this study was their discomfort when students were in distress and did not have a backup inhaler in the nurse's office. Nurses were conflicted about sharing another student's inhaler or utilizing an unlabeled inhaler to assist a student in respiratory distress, a legal dilemma for the nurse. When parents could not be reached, the only other option was to call 9-1-1 to activate the EMS system. Legislation allowing for standing orders and/or stocking relief inhalers/nebulizers could alleviate much of the concern/perceived barriers that nurses encounter when working with students who self-

carry inhalers in the school setting. This could be requested at the school district level with district and school policy changes. In order to promote equitable treatment of all children within the state, legislation at the state level is needed that would require all districts to provide back-up inhalers for their students. Further investigation into this critical step warrants priority attention and multiple stakeholder involvement.

Policy development at the state level could also examine a mandate to provide full-time school nurses at each school with a school nurse-to-student ratio of no more than 1:750 students. This would be critical to asthma management and could make the self-carry process more efficient.

For Arizona in particular, revising state law regarding the self-carry issue could include safety factors discovered in this study so that the self-carry process would be safer and more prevalent. For example, adding a mandate that self-carry has to be communicated to parents is critical. This may lessen the possibility of parents not knowing their rights to have their children self-carry. Including this in all school medication policies could be a start as parents appear to be more familiar with school level documents versus district or state level documentation. Another important component at the legislative level is to develop guidelines about how to manage children who engage in unsafe self-carry behaviors without denying their right to self-carry. Students must have access to their breathing medication.

Another policy implication would be the development of appropriate assessment policies and processes as well as documentation forms for when students need to self-carry. One school district had an excellent form with eight assessment steps to ensure the student was taught or knew about each component for safe self-carrying of rescue

inhalers and then evaluated. Also, if the school nurse did not agree with the parents and health care providers' request to self-carry, this district had a process to communicate these concerns with the parent and physician. Sharing the assessment findings and any concerns with all stakeholders might help parents and providers to re-evaluate their decisions about students' readiness to self-care. This provides empowerment and advocacy for the parent and student to manage their chronic disease.

Developing a coalition of various stakeholders (e.g., school nurses, parents, asthma organization representatives, student advocacy representatives, nurse associations, students, legislators) could tremendously influence this issue. This coalition could function in many ways, especially in terms of advocacy. The coalition could be utilized to revisit the Arizona self-carry law as it is written and to explore other state's laws regarding self-carrying inhalers in the school setting. This might lead to an investigation into the other 49 self-carry state laws and possible changes in the Arizona law. As it is written now, only parent permission annually and a prescription label is necessary for self-carry in Arizona; input from physicians, nurses, and students is not necessary. This coalition could look holistically at the legislative picture in the United States. Since the implementation of the Arizona law in 2005, the coalition could see if changes were needed or recommended. Review of other states' data, such as absenteeism, grades, morbidity, and mortality amongst students who self-carry could also provide valuable information as the impetus for change in Arizona self-carry law and policy.

It is imperative that, whenever possible, policy changes that are critical for promoting the health of asthmatic students are enacted at the state level through legislation, versus the district level, to ensure that every student in the state receives the

same standard of care related to self-carrying their asthma inhaler. As the literature demonstrates, legislation at the state level decreases barriers to self-carry at the local level.

### **Summary**

In conclusion, decisions about whether to support or discourage self-carry practice in the school setting is an issue that Arizona nurses frequently encounter. Currently, state law gives parents the permission to allow self-carrying inhalers by children in kindergarten to twelfth grade. However, as findings from this study reveal, state law did not prevent nurses from making decisions about self-carry practice. There were many factors weighed by the nurses to influence their decisions, represented by the substantive theory, *Balancing decision about the self-carry practice: Powerful influences*. These included contextual and conditional factors that led, to actions and their consequences. Overall, manipulating self-carry situations in one way or another; the nurses either supported or discouraged self-carry by micromanaging, supporting independence and empowerment, or by letting it go. Another meaning of the findings was the need for specific research addressing self-carrying in the school setting. Lastly, implications for nursing practice, nursing science, and policy development were addressed in order to enhance self-carry decision-making, practice, and processes.

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## APPENDICES

## Appendix A

### Demographic Data

Code\_\_\_\_\_

- 1)Age: \_\_\_\_\_
- 2)Education (number of school years completed): \_\_\_\_\_
- 3)Nursing degrees\_\_\_\_\_
- 4)Other degrees?\_\_\_\_\_If yes, what degrees\_\_\_\_\_
- 5)Year obtained Registered Nurse license? \_\_\_\_\_
- 6)What type of school (grade range) where you practice? \_\_\_\_\_
- 7)How many schools are you responsible for? \_\_\_\_\_
- 8)How many years have you been a school nurse? \_\_\_\_\_
- 9)How many students does each school have? \_\_\_\_\_
- 10)How many students are on free and reduced lunch? Free \_\_\_\_\_ Reduced \_\_\_\_\_
- 11)Does your school(s) have a self-carry medication policy? \_\_\_\_\_
- 12)How many asthmatic students do you have? \_\_\_\_\_
- 13)How many asthmatic students have an inhaler in the health office? \_\_\_\_\_
- 14)How many students self-carry an inhaler? \_\_\_\_\_
- 15)How many of the students who self-carry have a back up inhaler in the health office?

Appendix B  
Interview Guide

1. Tell me about the kids with asthma in your school(s) who self-carry inhalers.

What is that like?

What are the pros and cons?

2. What do you feel is your responsibility regarding children self-carrying inhalers in the school settings?

How do you decide if children should self-carry?

3. What care do you provide students in regards to self-carrying inhalers in the school setting?

4. What facilitates or challenges your care of these children?

5. What guides your practice in determining which children can self-carry inhalers in the school setting?

Policies?

Laws?

6. Is there anything you would like to add?

## Appendix C

### University of San Diego Institutional Review Board

#### Research Participant Consent Form

For the research study entitled:  
School Nurse Perceptions and Decisions about Children  
Self-carrying Inhalers in School

#### **I. Purpose of the research study**

Lisa Jaurigue is a student in the Hahn School of Nursing and Health Sciences at the University of San Diego. You are invited to participate in a research study she is conducting. The purpose of this research study is: to explore the perceptions and decisions of school nurses when caring for asthmatic children who may need to self-carry prescribed inhalers in the school setting.

#### **II. What you will be asked to do**

If you decide to be in this study, you will be asked to:  
Participate in a one-on-one interview with Lisa. The interview will be about 60-90 minutes. You will also be asked to complete a 15 item questionnaire about your age, education, years of experience, and information about the school(s) where you practice. If you agree, Lisa may contact you once by telephone in a few weeks after the interview for about 15-30 minutes to clarify certain aspects of the interview. You will be audiotaped during the interview.

Your participation in this study will take a total of 60 to 120 minutes.

#### **III. Foreseeable risks or discomforts**

This study involves no more risk than the risks you encounter in daily life.

#### **IV. Benefits**

While there may be no direct benefit to you from participating in this study, the indirect benefit of participating will be knowing that you helped researchers better understand school nurse perceptions and decision regarding children self-carrying inhalers in the school setting.

#### **V. Confidentiality**

Any information provided and/or identifying records will remain confidential and kept in a locked file and/or password-protected computer file in the researcher's office for a minimum of five years. All data collected from you will be coded with a number or pseudonym (fake name). Your real name will not be used. The results of this research project may be made public and information quoted in professional journals and meetings, but information from this study will only be reported as a group, and not individually.



**VI. Compensation**

You will receive no compensation for your participation in the study.

**VII. Voluntary Nature of this Research**

**Participation in this study is entirely voluntary. You do not have to do this,** and you can refuse to answer any question or quit at any time. Deciding not to participate or not answering any of the questions will have no effect on any benefits you're entitled to, like your health care, or your employment. **You can withdraw from this study at any time without penalty.**

**VIII. Contact Information**

**If you have any questions about this research, you may contact either:**

**1) Lisa Jaurigue**

**Email: ljaurigue@gcu.edu**

**Phone: 602-330-4321**

**2) Dr. Susan Instone**

**Email: sinstone@sandiego.edu**

**Phone: 619-260-4575**

**I have read and understand this form, and consent to the research it describes to me. I have received a copy of this consent form for my records.**

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Signature of Participant

Date

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Name of Participant (**Printed**)

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Signature of Investigator

Date